ANALYSIS OF STANDARD TYPE UNIT DEVELOPMENT

THESIS

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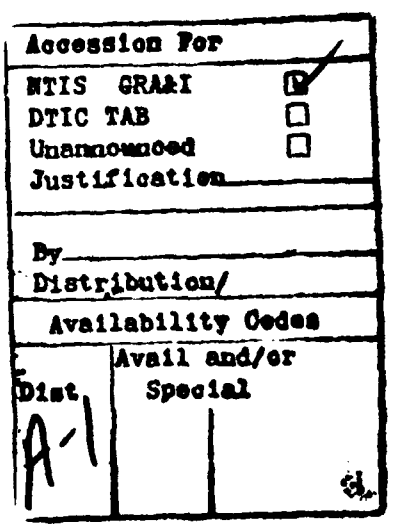

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THESIS

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Jeffrey M. Hess and Merry D. Wermund

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Abstract

This research study examined the standard type unit development process for the Air Force. Current standard type unit development procedures were determined by a literature review. The literature review, with the interviews, provided information regarding the history of, purpose for, and possible alternatives for developing standard type units. A Delphi questionnaire was developed to determine how well the current process works, how standard type units worked for Desert Shield/Storm, and possible ways to improve the development process. This questionnaire was distributed to F-15 units, F-16 units, and major command personnel in Tactical Air Command (now Air Combat Command). All three levels in the development process were represented in the study. Analysis indicated that the current development process does not produce standard type units capable of meeting mission requirements. The process requires modification. Key changes required are formal training for all personnel within the development process, and developing one comprehensive publication detailing the duties and responsibilities at all levels of the standard type unit development process.

ANALYSIS OF STANDARD TYPE UNIT DEVELOPMENT

I. Introduction

Chapter Overview

This chapter introduces a brief background of the problem of insufficient lift capability and the requirement to rapidly deploy troops. Following the background, the general issue explores the causes for forces arriving late during Desert Shield/Storm. Once identified, the specific problem is focused into a research question and three investigative questions. Next, the scope, justification, and structure for the study are presented. Finally, a brief summary of the key points of this chapter are provided.

Background

In 1981, the United States Congress directed the Department of Defense to examine the growing shortfall in wartime lift capability. The result was a document known as the Congressionally Mandated Mobility Study. This thesis is concerned with only the strategic airlift issues of that study. One of the results of this study was the establishment of a goal of 66 million ton miles a day for airlift to support Europe (6:10). "A ton mile is the ability to move one ton one mile by airlift" (6:10).

Mobility experts said this goal was not sufficient to meet wartime airlift requirements.

> Jeffrey Record, an airlift expert and analyst with the Hudson Institute, agrees, "The 66 million ton miles a day was not an actual requirement, but rather a political judgement on what you could buy." (6:10)

The actual requirement was estimated to be between 100 to 125 million ton miles a day to reinforce Europe (6:10). In other possible scenarios, such as the Persian Gulf conflict, the estimated difference between the capability and requirement for airlift ranged from 90 to 150 million ton miles a day (24:7).

To effectively utilize and control lift capability, Congress recommended in 1986 and later supported the creation of a new unified command, United States Transportation Command (USTRANSCOM). Its mission consists of controlling strategic transportation assets during war. In essence, it assumes the responsibilities of the Army, Air Force, and Navy transportation components during contingency operations (24:6).

The first commander of USTRANSCOM, General Duane H. Cassidy, knowing of the shortfall in airlift assets stated that "we're always going to be short of transportation assets, so we had better use what we have as efficiently as possible" (6:10).

General Cassidy's comments hold today. Strategic airlift is still limited and vital to success. "Regional focus, flexible/adaptive planning, and reduced forward

presence have all combined to significantly increase our reliance on strategic mobility" (29:24). "The ability to win [a contingency] is based on the ability to provide rapid movement of forces from wherever they are to wherever they are needed" (29:9).

In August 1990, the US responded to the invasion of Kuwait by Iraq by moving forces into the Persian Gulf area and then actual combat to force Iraq out of Kuwait. This movement of forces to the Gulf area was known as Operation DESERT SHIELD. The combat activity was designated Operations DESERT STORM. Hereafter in this thesis, Operations DESERT SHIELD and DESERT STORM will be referred to as Desert Shield/Storm.

Desert Shield/Storm provided an excellent example of rapid movement of forces into a theater of operation and continual resupply. "The airlift effort .... surpassed [by the end of August 1990] 760 million ton-miles--moving more than 95 thousand tons the 7-10 thousand miles from the US to the Mideast" (16:5). Moving such a large volume of equipment in a relatively short period of time revealed there were still problems with the effective use and control of strategic airlift. One of the major problems during Desert Shield/Storm was that the forces arrived late (23:20).

General Issue

Desert Shield/Storm demonstrated four main causes for

the forces arriving late. First, insufficient airlift assets were available to meet the initial requirement placed on USTRANSCOM (1:1).

Second, changes frequently occurred in unit movement priorities during Desert Shield/Storm. As a result, timing for unit moves and their associated airlift changed often. As one author put it, "the first casualty of the deployment [was the] 'Tip Fid,' the intricate time-layered time-phased force deployment data scheme" (23:19). The "Tip Fid" is developed using the original priority of units, the available airlift assets, and the data about units being moved. The priorities given to the USTRANSCOM's crisis action team were changed up to six times a day. This meant that some aircraft were diverted sometimes more than once while enroute to the onload base. Consequently, this wasted much of the airlift capability for that day (1:1).

Third, the data about unit transportation requirements contained in unit type code data was not accurate. The participants at 1991 USAF World-Wide Mobility Conference noted that some of the major commands' unit type code functional managers did not know the proper procedures for type unit development. Also noted was a lack of knowledge regarding what standard type units were available for tasking (34:3).

The type unit is

> a hypothetical organizational entity established by the Armed Forces and described by the approximate physical and movement characteristics of all real-world units of

> a similar type that it represents. It is identified by a unique five-character alphanumeric unit type code. (26:I-36)

(The term unit type code, which refers specifically to a five-character alphanumeric, and the term type unit are used interchangeably in this thesis.) A complete listing of formal definitions is provided in Appendix A.

Evidence of problems with functional managers' knowledge levels can also be seen in the increased number of non-standard type units built. The functional managers developed non-standard type units when no standard type unit would fit the requirement. In many cases, the standard type unit would have worked, if tailored to the unique requirement (19:5).

The fourth reason for forces arriving late stemmed from some units deploying with equipment above the standard type unit authorization. "Units deployed with more than the standard unit type code required" (19:5). One lesson learned reported, "cargo weight was underestimated by over 300% and passengers by 40%" (19:4). "Adding requirements [additional equipment] at this time [execution] will cause delays in other scheduled movements. This will cause a ripple effect throughout the deployment" (26:7-27).

Specific Problem

Desert Shield/Storm revealed that "units deployed with more [equipment] than the standard unit type code [type units] required" (19:5). Regulatory procedures exist for

the development and maintenance of the standard type unit. The procedures seemed to be inadequate or misunderstood for establishing a standard equipment listing for type units to deploy with as evidenced by units deploying heavy.

Research Question

Are the type unit problems noted during Desert Shield/Storm related to standard type unit development procedures? If there are problems in the development process, how can the system be improved to prevent them from occurring in the future? Some of the problems noted were units deploying heavy, standard type units not able perform the mission without augmentation, non-standard type units built when standard type units were available.

Investigative Questions

1. What are the policies and guidance for development of standard type units?
2. Did the standard type units deployed during Desert Shield/Storm provide the units with all the required equipment to perform their designated missions?
3. Can the standard type unit development process be changed to produce a standard type unit capable of performing the mission?

Scope of the Study

This research concentrated on the procedures and personnel used to develop and maintain the cargo portion of

standard type units to find possible causes for the units deploying heavy during Desert Shield/Storm. This study considers only active duty Air Force units. The F-15 and F-16 aviation standard type units were selected because tactical fighter type units make up a large portion of the assets moved by airlift (24:7). Also, these units were among the first units deployed into the theater of operations when airlift was very critical. Finally, these units did not own organic airlift aircraft and therefore documented cargo moved for these units was close to the total moved.

Justification

A review of the causes for the forces arriving late reveals some which can be controlled and some that can not. The problem with the knowledge level of the functional managers and units deploying heavy is controllable, and needs to be modified to preclude recurrence in future conflicts. Since Desert Shield/Storm was nearly a worst-case scenario for testing airlift assets (23:20), the solutions to these causes should be applicable to future deployments.

One tool currently used in planning, that will also be used in future planning, is the standard type unit. These units are the building blocks used in planning.

> The unit type code [type unit] is the primary means for identifying types of forces to be described in force requirement data. Standard unit type codes [type unit] should be used in force list development because force

> lists with too many non-standard force requirements tend to become unmanageable" (14:395).

To further enhance the building of deployment data, type units are used in developing force modules.

> Force modules are a planning and execution tool based on the concept of linking combat units with their supporting units and an appropriate amount of logistics supplies to sustain the units for at least 30 days for a particular type of mission. Force models are developed in part by a combination of UTC packages which are used as building blocks for creating operation plan Time Phased Force Deployment Data files. .... Using the force modules becomes a key element in the joint planning and execution process. Force modules do provide the capability to rapidly build deployment data bases and transfer those data in a more timely manner than currently available (14:391).

The standard type units and force modules are tools for the military planner to rapidly build a force for deployment. These tools may become more important as a result of the fact that "regional crises are the predominant military threat we will face in the future. We must .... be able to respond quickly and effectively ...." (5:28). The planners need these tools to accurately represent a certain capability. Also, the planner establishes the priorities of the standard type units for the building of a deployment schedule. If the standard type units are incorrect, the force modules will also be incorrect.

Structure of Research Thesis

This thesis is structured into five chapters. This chapter introduces the problem of units deploying heavy during Desert Shield/Storm. Also, it provides the

investigative questions that must be answered in order to answer the research question.

Chapter II provides the literature review related to the standard type unit. It examines the history and current procedures for type unit development and maintenance.

Chapter III provides the methodology used for answering the research question. How each investigative question was answered by the literature review or by the panel experts is detailed. The reason for using the Delphi method, the development of the Delphi research instrument, the analysis methods, and criteria used for evaluation are enumerated.

Chapter IV provides the data collection and analysis process. Analysis of each of the investigative questions as answered by the questionnaires or during the literature review is provided.

Finally, Chapter V provides the thesis conclusions and recommendations. It also provides recommendations for further research.

Chapter Summary

The importance of a standard type unit in the planning and execution process was shown. One reason forces arrived late during Desert Shield/Storm centered around type units deploying heavy. This recurring problem was the motivation for this study. Examples of other problems encountered were provided. To prevent this problem from occurring in the future, current type unit development procedures must be

evaluated to determine possible improvement(s) to the process.

II. Literature Review

Chapter Overview

This chapter documents a review of government and civilian literature to identify background and issues pertaining to late delivery of forces and supporting equipment. It expands on the basic problem and general issue. Portions of the review are used to answer the investigative questions. The review examines the current national security and military strategies of the US to determine possible impact of recurrence of late delivery of forces and equipment. The history of standard type units is reviewed to determine how they evolved and were used to meet planning and execution needs. This review also identifies current procedures for joint planning and the use of standard type units. The development of standard type units is then reviewed to determine the overall process. Finally, the literature review provides the background for answering the first investigative question and forms the basis for the questionnaire to answer the remaining investigative questions.

Current Military Strategy

The National Security Strategy of the United States and the National Military Strategy Document indicate that strategic airlift will have an increased emphasis in the future due to the types of conflicts in which the US is

likely to be involved. "We must be prepared for our interests to be challenged with force, often with little or no warning" (5:28). The National Military Strategy Document identifies the need to be prepared to protect our interests on short notice. A key demand involves the capability to respond effectively to regional crises. "The ability to win [in any contingency] is based on the ability to provide rapid movement of forces from wherever they are to wherever they are needed" (29:9). "Simply stated, it takes planning, airlift, manpower, and timely execution of operations to rapidly move an Air Force combat unit" (11:3). A key factor in movement is airlift.

Airlift was and still is a major constraint on the ability of the US to quickly deploy sufficient personnel and equipment to the war zone. Reliance on strategic mobility has significantly increased (29:24). This increased reliance is the result of "regional focus, the need for flexible or adaptive planning, and a reduced forward presence" (29:24). The importance of strategic mobility is such that "any weak link along this complex chain can disrupt or even halt a deployment" (29:24).

Strategic mobility is basically the "ability to move massive amounts of solders, supplies, and equipment anywhere, anytime, as quickly as possible" (4:3). Strategic mobility includes both strategic airlift and sealift. Without strategic mobility, the best fighting force in the

world is useless (4:3). This thesis concentrates on the strategic airlift aspect of strategic mobility.

The current commander of USTRANSCOM, General Hansford Johnson, stated that,

> airlift is what stabilizes a crisis, because if we relied on fast sealift, Saddam Hussein could have done all sorts of things, and been finished long before we got there. And the fact is our airlift is not adequate. People who say it is don't realize that our forces arrived late. If we had been in a shooting war, we couldn't have afforded that. (23:20)

Strategic airlift availability is currently insufficient to field an overwhelming force within a short period of time anywhere in the world (24:5). Airlift planning utilizes standard type units for deployments. However, a review of US history reveals that deploying with non-standard type units (different equipment) has been the norm rather than the exception.

History of Standard Type Unit Use

Introduction. A study of US Army and Air Force history reveals the need for, and development of, a standardized equipment authorization for units with the same mission. The historical evidence, documented below, identifies many crucial elements associated with identifying and standardizing equipment for units with like missions. First, a common theme throughout history is the need for logistical planning to improve the ability to respond quickly with sufficient troops and equipment to win. The ability to determine the amount of equipment a unit requires

to perform its mission is important to facilitate large scale planning; it continues to be a major need for logistics planners. Next, knowledge of all the units' requirements enables planners to determine the necessary equipment, the time to produce it, and the funds to procure it. Also, knowledge of the amount and type of equipment with which a unit deploys is required to facilitate transportation planning. This historical review provides insight into the development and use of standard type units.

Civil War. The US Army developed allowance tables for supplies and equipment to satisfy organizational as well as specific individual needs. During the Civil War these "tables of supplies and equipment were used to perform rudimentary logistics planning" for troop-sized units (21:171).

Although tables and regulations prescribed supply and equipment allowances, the problem of "excess" baggage frequently strained the transportation systems. "An almost continuous battle went on against the tendency of commanders to increase the size of their trains" (21:216). Major General Henry W. Halleck, the US Army General in Chief in 1862, issued "a general order calling the attention of all officers 'to the absolute necessity of reducing the baggage trains of troops ....'" (21:216). He also stated "the mobility of our armies is destroyed by the vast trains which attend them, and which they are required to guard" (21:216). President Lincoln was also concerned about this problem; he

"was sure that demands for more supplies and baggage than necessary were delaying the Federal armies" (21:217).

Post Civil War. In 1905, the War Department published the Field Service Regulation, United States Army, which examined contemporary thought on tactics and logistics (33:61). Under the section on organization, the regulation directed the formation of provisional brigades and divisions so that smaller permanent units could train for war. It also specified that the infantry division, not the army corps, was the unit for combined arms (33:61). The rationale behind this last requirement centered around the idea that armies should be organized to fit the characteristics of the enemy, to carry out a particular mission, and to adapt to the terrain and roads of the theater of operations (33:62). Ultimately, the intent of the regulation was to provide standard and stand-alone army divisions for training and readiness purposes.

During the Mexican Revolution in 1911, the War Department sent army units to the southern border of the US. Although this deployment only lasted five months, it highlighted many logistical problems. At the mobilization sites, the inspector general discovered that "no two units had the same tonnage, organic transportation equipment or quartermaster supplies" (33:65). Furthermore, the inspector general found that the performance of medical units was severely degraded by their haphazard formation (33:65). The inspector general made several recommendations to eliminate

these problems, one of them being to issue standard equipment for all units.

World War I and Pre World War II. During World War I, the US Army used allowances which were identified in "tables of organization and equipment, tables of basic allowances, tables of allowances, and other lists" (21:493) to plan. The Army:

> calculated requirements for initial equipment by multiplying the allowances given in tables of organization and tables of fundamental allowances by the number and kinds of units to be called into service, but this left unanswered the question as to whether the allowances were realistic, and the even more difficult question as to the accuracy of estimates of probable expenditures and requirements for replacement supplies. The information was available in the experience of European armies that had been at war for over two years; yet the General Staff had done almost nothing to collate, to bring up to date, or to analyze this information in order to develop experience factors and requirements upon which to base a procurement program. (21:311)

World War II and the Korean War. According to Jerome G. Peppers, Jr, Professor Emeritus, School of Systems and Logistics, Air Force Institute of Technology, and Adjunct Professor at Central State University, the tables of organization and equipment used in World War II and Korea had several parts (28). They listed the number of authorized personnel with a particular military organizational specialty. They also included equipment listings which specified equipment items and quantities required by a particular type of unit to meet its mission. Ultimately, these tables established a standard for each unit to follow. The tables were generic in that they were

neither weapon system nor deployment location specific. The fact that the tables were generic and that "initial issue on the basis of the tables of allowance (TA) was automatic" (27:97) caused problems.

> Units were over-equipped in some respects and under-equipped in others because the tables of allowance didn't and couldn't take into account the situational and environmental differences for individuals or organizations or the effects of changing combat conditions and the subsequent losses of supplies and equipment. The TA created a great deal of waste and a drain on the distribution and transportation systems. (27:97)

Even if the commanders recognized the waste, changes to the tables of organization and equipment were not normally approved (28).

Even though initial issue was automatic, reviewing the equipment a particular unit used to meet its mission and comparing it to the standard often showed some differences. These differences could be attributed to the fact that the unit commander had the authority to "tailor" items authorized by the table of organization and equipment; he could add or subtract equipment to meet his particular needs (28). While tailoring was possible, obtaining "additional" equipment was not easy. Additional equipment could be obtained through special lists of equipment submitted for War Department approval (21:501).

> It was difficult enough to maintain effective supply of regularly authorized items of supply and equipment, but more difficult by far the supply of special purpose items not included by the different tables of equipment and tables of allowance. .... Less satisfactory was the practice of simply submitting requisitions for additional supplies and equipment on short notice.

> Even though justification of the additional requirements could be found, hasty attempts to meet them in this manner were bound to lead to confusion and waste. (21:501)

Vietnam. The Vietnam conflict yielded numerous lessons learned and recommendations. Two recommendations related to this thesis are: (1) the requirement that

> the tactical fighter squadrons will be organized as integral units to increase the wing's deployment flexibility and provide an improved capability to carry out its wartime/contingency mission under widely varying situations (32:2)

and (2) the implementation of "the proposed Joint Operation Planning System" (22:28).

The first recommendation stemmed from a problem noted by General William W. Momyer, Commander of Tactical Air Command.

> Referring to Korea and the problems of that build-up, he pointed out: We *didn't* learn our lessons too well because we had to do it again in Vietnam. We weren't favorably impressed with the time it took to build-up our forces in Vietnam. From the decision time it took us two years. (20:34)

In the same article he said, "I see us deploying and starting operations within 72 hours. In 90 days we should be able to sustain the effort indefinitely" (20:34). The solution for the deployment and operations of the unit was

> the squadron must become the basic fighting unit-and *this becomes the key factor in all of our programs.* The squadron must have in it the command structure and assets to deploy and operate as a unit. (20:34)

Changing the basic fighting unit from a wing to a squadron fit well with the standard type unit being designed under

the Department of Defense directed Joint Operations Planning System. A type unit is

> a hypothetical organizational entity established by the Armed Forces and described by the approximate physical and movement characteristics of all real-world units of a similar type that it represents. It is identified by a unique five-character alphanumeric unit type code. (26:I-36)

The second recommendation related to this thesis from the problems of the Vietnam Conflict was the proposed Joint Operation Planning System. The Joint Logistics Review Board stated that it "will strengthen the planning function because a small number of plans will be identified as a package for establishing hard-core, firmly recognized logistics requirements" (22:28).

Joint Operation Planning System

The Joint Operation Planning System (JOPS) is

> the Department of Defense-directed, Joint Chiefs of Staff-specified system to conduct joint planning during peacetime and in crises, is an ordered and comprehensive set of procedures to translate an assigned task into a plan of operations. JOPS supports the strategic-direction function of Chairman Joint Chiefs of Staff and establishes procedures for developing, reviewing, and executing global and regional plans. It is oriented toward solving the complex strategic mobility problem associated with force and support deployment and sustainment. (26:5-24)

Development of the Joint Operation Planning System was initiated in the 1960's, and approved by the Joint Chiefs of Staff in 1970. The system was designed to fulfill several needs. Standard type units and their associated data meet one of the system's six requirements. The system's six requirements are:

(1) foster common understanding by using standard procedures throughout the planning community;

(2) give standard formats for operation plans that contain only the information necessary to understand and use the plans;

(3) incorporate standard data files and common application programs in a system compatible with all users to allow the rapid flow of information;

(4) permit the identification of shortfalls early in the planning process;

(5) include a mechanism for plan refinement and review; and

(6) allow rapid conversion of the operation plan (OPLAN) into an operation order (OPORD) during a crisis. (26:5-25)

The requirement for standard data files led to standard type units since they are the "source of basic planning information" (26:5-26).

> This [standard data files] is the information which is relatively static or constant. For example, one file contains the movement information on all "type" units in each of the four services-a total of approximately 6000 "type" units such as "an infantry rifle company" or "a tactical fighter squadron." This information includes a description and total of all cargo and passengers in the unit which must be moved by nonorganic [not owned by the unit] lift. (2:11)

The military planner uses these type units in the deliberate and crisis action planning environments.

Deliberate and Crisis Action Planning

Deliberate planning consists of operation planning tasks that are performed for selected contingencies when time permits. Crisis action planning is similar to deliberate planning, "but it is a more flexible system that responds to the demands of changing events" (26:6-3).

> The overall procedures are the same for both deliberate and crisis action planning: receive and analyze the task to be accomplished, review the enemy situation and begin to collect necessary intelligence, develop and compare alternative courses of action, select the best alternative, develop and get approval for its concept, prepare a plan, and document the plan. (26:6-2)

The purpose of deliberate planning is to develop an operation plan or a concept plan based upon the Joint Strategic Capabilities Plan. The Joint Strategic Capabilities Plan

> conveys strategic guidance, including apportionment of resources, to the CINCs [commanders in chief of unified or specified commands] and the Chiefs of the Services, to accomplish assigned strategic tasks based upon military capabilities existing at the beginning of the planning period. (26:I-19)

Crisis action planning differs from deliberate planning one key way. The theater commander prepares and, at the direction of the national command authority, executes an operation order (26:7-3). An operation order is "a directive issued by a commander to subordinate commanders for effective coordinated execution of an operation" (26:I-26). The operation order could be derived from one of the following three courses of action:

> [1] an existing operation plan may have been built and can be modified. [2] An existing concept plan may be available and can be fully developed beyond the stage of an approved concept of operations. Both of these formats are stored in the Joint Deployment System database and are available for planner review. For situations that have not been considered by prior planning, [3] a noplan situation is said to exist; timely creation of a concept of operation and the time-phasing of forces and support are required. (26:7-20)

No matter which course of action is required, the military planner works with standard type units during the execution planning and execution of the operation order.

With the information from the standard type units, USTRANSCOM builds feasible transportation schedules for execution planning (26:7-24). To accomplish this, they transfer data contained in the standard type units into the Joint Deployment System deployment database. The Joint Deployment System (JDS) is

> personnel, procedures, directives, communication systems, and electronic data processing systems that directly support time-sensitive planning and execution and complement peacetime deliberate planning by disseminating deployment information. (26:I-17)

The Joint Deployment System "is the primary means for adding, changing, or deleting requirements in the deployment database" (26:7-26).

> During the execution phase, changes to the original plan may be necessary because of tactical and intelligence consideration, force and nonunit cargo availability, availability of strategic lift assets, and point of embarkation and point of debarkations capabilities. Therefore, ongoing refinement and adjustment of deployment requirements and schedules, and close coordination and monitoring of deployment activities are required. The JDS deployment database should contain at least the following information at the time of operation order execution: first, sourced combat, combat support, and combat service support requirements for assigned and augmentation forces; second, integrated critical resupply requirements identified by supply category, point of debarkation and latest arrival date; and third, integrated nonunit personnel filler and casualty replacements by numbers and day. Practical considerations require that planning concentrate on the first seven days of air movement and the first thirty days of surface movement. Major changes to deployment plans with effective dates more than about seven days or so in the future will have very little impact on the scheduling process;

> however, changes with effective dates of seven days or less may adversely affect the timely development of the airlift flow schedule. Adding requirements now may cause delays in other scheduled movements. (26:7-27)

Desert Shield/Storm is an excellent example of time-sensitive planning and some of the problems that can occur during execution.

Desert Shield/Storm

With respect to the Desert Shield/Storm deployment, late arrival of troops can be attributed to numerous factors. First, there were insufficient strategic lift (air and sea) resources. United States Central Command "original requirements--from the draft operational plan for deploying troops and equipment to Southwest Asia .... exceeded our [USTRANSCOM] capability by as much as 7,000 tons a day" (1:2). Even with this shortfall, the deployment schedule was developed to deploy the units in order of their priority. Thus, the shortfall snowballed and units were pushed further and further to the right in the transportation schedule.

Another contributing factor to the late arrival of units can be attributed to some "units deployed with more than the standard unit type code [type unit] required" (19:5). The main reason for this was the "take everything including the kitchen sink" mentality. As one lesson learned noted "the cargo weight was underestimated by over 300% and passengers by 40%" (19:4). Thus, this required

more lift than planned in the original schedule, requiring further delays of later moving units.

The units, in addition to deploying with extra equipment, had other problems with standard type units during Desert Shield/Storm. First, "the unit type code [type unit] did not contain all the necessary equipment or personnel necessary to do the job at the assigned location" (19:5). This point was confirmed in an interview with Lieutenant Colonel Cox, USAF (Retired). He was the deployed Deputy Commander for Resource Management at Riyadh, Saudi Arabia and was tasked with the setup of support facilities at that base. Lt Col Cox noted that some of the standard type units tasked did not have the proper number of personnel required to perform the mission even though all of the personnel and equipment were deployed in accordance with the standard type unit. As a result of the deficiency of some of the standard type units, he had to request additional personnel (7). Thus, additional type unit were required to be tasked, delaying the operational readiness of the unit until their arrival.

Another problem noted during the deployment dealt with the heavy use of non-standard type units. A non-standard unit is

> a force requirement identified in an operation plan for which movement characteristics have not been described in the type unit data file. The planner is required to submit detailed movement characteristics for these units. (26:I-24)

During Desert Shield/Storm, "non-standard unit type codes [type unit] were developed for those instances where no unit type code [standard type unit] would fit" (19:5). The person building these non-standard type units was normally a functional manager or military planner on the Desert Shield/Storm command battle staff. "However, in many cases, the unit type code [type unit] did exist; it was just not tailored" (19:5). This problem could be attributed to the large number of standard type units, lack of experience, or lack of knowledge by the functional managers or military planners tasking the type units.

Also, some functional managers or military planners of the Central Air Forces battle staff, under the direction of Central Command, incorrectly tasked some standard type units. They tasked a dependent (augmentation for an independent stand alone unit) type unit that was to designed to augment a shop, when an independent (stand alone unit) type unit was required to set up a field operation. This caused some additional type units to be tasked in order to perform the mission. If the additional type units were not available, the deployed units purchased the required equipment off the local economy to perform the mission (7).

Thus, limited airlift, units deploying heavy, and non-standard type units contributed to the late arrival of troops. The airlift shortfall is a given for a long time, thus the solution to late arrivals must be addressed in the standard type units. Reviewing the current standard type

unit development process may provide some insights as to why these problems occurred.

How Standard Type Units are Currently Developed

Standard type units are developed by the four services of the US armed forces. This section of the literature review looks at the development process of the US Air Force and the US Army. The current Army process was reviewed as a possible alternative system to the Air Force's system. The Army system might serve as a solution to some of the problems within the Air Force development process.

The Air Force Type Unit Development Process. USAF Operation Planning Process, Air Force Regulation 28-3, governs the standard type unit development process at the major command and unit levels. USAF Mobility Planning, Air Force Regulation 28-4, provides guidance for equipment standardization according to the type unit at the base and unit level.

The overall standard type unit development process involves three main types of participants. These are the functional manager, pilot unit, and non-pilot unit as shown in Figure 1.

Responsibilities of the Major Command Unit Type Code Functional Manager. The position of functional manager is key in the development of new standard type units as indicated in Figure 1. The functional manager is the person assigned to a particular functional area (e.g., civil

engineering or security police) designated to manage specific standard type unit(s). He or she is the focal point at the headquarters for any questions concerning the specific standard type unit(s).

Standard type units are developed based on the mission capability statement. A mission capability statement (MISCAP) is:

> a short paragraph that describes the mission capabilities of a particular unit type code (UTC) [type unit]. The MISCAP contains a general mission statement, the type of bases to which the UTC can be deployed, functions included in the UTC, flying hours per month, and crew ratio. (13:A1-1-1-7)

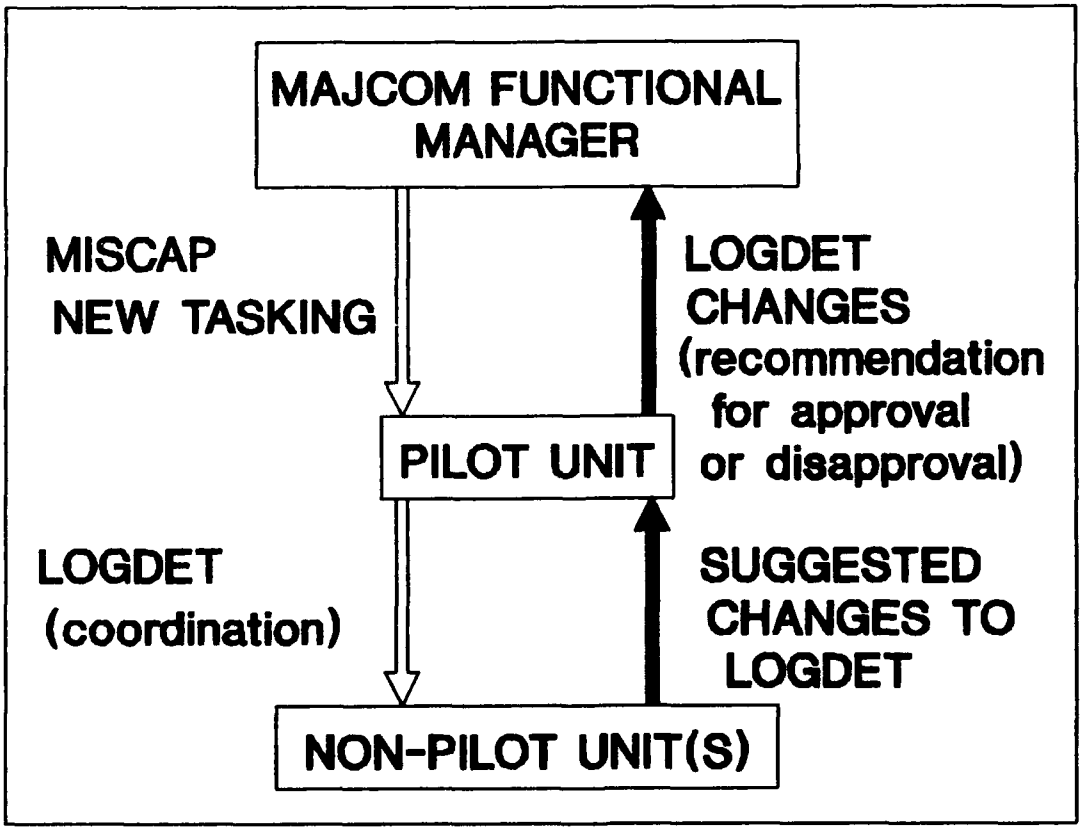

Figure 1. Standard Type Unit Development Process

The functional managers verify that the equipment and personnel identified by the standard type unit development process meet the standard type unit's mission capability statement. Once the standard type unit is developed, the functional managers must annually review and update it.

They must also designate the standard type unit's pilot unit (see Figure 1, unshaded arrow). The pilot unit is

> a unit tasked to develop and manage the materiel and manpower requirements for a standard unit type code. Pilot units are selected by major commands and report the logistics detail to the major command [see Figure 1, shaded arrow]. (13:A1-1-1-8)

The functional manager ensures the logistics detail is accurate. The logistics detail is:

> the specific identification of materiel required to support a unit type code [type unit]. [It] includes detailed data on each stock number, such as weight, dimensions, and cargo category code. (13:A1-1-1-7)

The functional manager checks the logistics detail annually for consistency with current tables of allowance (tables that list equipment types and quantities authorized for use by specific type units), and coordinates all updates with the designated pilot unit and appropriate staff agencies prior to implementation.

Additionally, the functional manager ensures development of new standard type units is coordinated with other affected major commands, Headquarters Air Force Reserves, and the National Guard Bureau (14:386).

Responsibilities of the Pilot Unit. The pilot unit develops the logistics detail for the standard type

unit using the appropriate tables of allowance based on the type unit's mission capability statement. Items may not be included in the logistics detail unless they are included in the appropriate tables of allowance as authorized for mobility use (14:388). If equipment is required to perform the mission but is not included in the tables of allowance, the pilot unit is responsible for requesting modifications to the tables of allowance from Air Force Materiel Command, the manager of the tables of allowance.

Once an initial logistics detail is developed and distributed to the non-pilot units (see Figure 1, unshaded arrow), the non-pilot units may suggest changes to ensure data integrity or mission capability requirements can be met (see Figure 1, shaded arrow). The pilot unit coordinates recommended changes to the logistics detail with non-pilot units (14:388). If a majority of units concur with the recommended change and the action does not involve a table of allowance change, the pilot unit sends a message to the major command functional manager requesting approval to change logistics detail. If most of the units disagree with the recommended change, the pilot unit still sends a message to the command with a synopsis of the disapproval (see Figure 1, shaded arrow). If the majority of units concur with the recommended change and a table of allowance change is required, the pilot unit requests a table of allowance change. If the change to the table of allowance is

approved, and the functional manager approves of the change, the item is included in the logistics detail (14:389).

Responsibilities of the Non-pilot Unit. The non-pilot unit is defined as "a unit with a standard unit type code [type unit] tasking but is not responsible for developing or reporting materiel and manpower requirements" (13:A1-1-1-8). The non-pilot unit evaluates pilot unit recommendations for changes to the tables of allowance and provides comments, concurrence, or nonconcurrence. The unit also provides feedback on the pilot unit's developed logistics detail to ensure data integrity (14:389).

In addition, the non-pilot unit's mobility officer is responsible for ensuring unit equipment is standardized with the pilot unit to the maximum extent possible, and reconciled with tables of allowance (13:18).

Development Process of the Other Services. Development of standard type units is also required of the other services. The Army's development process is the most similar to the Air Force. The Army has developed the Computerized Movement Planning and Status System to maintain data files which contain characteristics of their standard equipment. These data files are used in a computer model and also used to complete the Army Capabilities Plan which interfaces with the Joint Operation Planning System and can be tailored to meet unit deployments (31:15). Although the Air Force has a computerized system (Contingency Operations Mobility Planning and Execution System) to perform the same

function of storing movement data files, the Army's development process differs in one major aspect.

Today, the Army uses a computer model to determine the forces for each base. This is performed at United States Army Training and Doctrine Command. The command establishes the tables of organization and equipment, level of support, number of personnel, and the number of equipment sets for a standard unit. Once they develop the standard unit, they staff this throughout all the commands for approval. Once approved, this standard unit is established. To determine base requirements, the Army inputs the type of combat unit into a model which determines the number of support forces required for each base (18). All decisions regarding the standard unit are worked at a major command level or higher in the Army. This differs from the Air Force where the pilot unit builds the standard type unit at a squadron or wing level.

Chapter Summary

The literature review identified current military strategies to meet threats to US national security. A long history of attempts to develop a standard type unit to facilitate planning and efficient troop movement was revealed. First, history showed that a lack of standard units was a problem as far back as the Civil War. Excess baggage slowing down the movement of troops was a major problem. Standardization was also a problem during the

Mexican Revolution in 1911. The inspector general noted that no two units were the same and recommended that they be standardized. Tables of allowances, which were in use by the Army during the Civil War, were still a problem in World War I, World War II, and Korea. They provided unrealistic allowances (overages and shortages) for equipment for units to perform their respective missions.

Second, the lessons learned from Vietnam led to development of a system for the standardization of planning. This system is the Joint Operation Planning System. This system was designed to be used in the deliberate and crisis action planning environment. One of the reasons it was designed was to provide standard type units for planning. Standard type units and the use of squadrons as the basic fighting unit enable the military planner to build a deployable force quickly. Any "changes with effective dates of seven days or less may adversely affect the timely development of the airlift flow schedule .... [and] may cause delays in other scheduled movements" (26:7-27).

Third, Desert Shield/Storm provided an excellent example of crisis action planning. A major problem with the deployment was forces arriving late. There were numerous reasons for this. Some relate back to problems with some standard type units: units deployed heavy and some standard type units were developed incorrectly (not enough personnel or equipment to perform the mission). Another problem concerned the knowledge level or abilities of the functional

manager or military planner. Some of them tasked the wrong standard type unit or built a non-standard type unit when a standard type unit was available. With these problems noted, an examination of the development procedures was conducted.

The last section of the chapter describes the Air Force and Army's methods for developing standard type units. The development process for these two services are very different. The Air Force development process occurs at several levels of command; most of the development work is performed at the wing or squadron level by the pilot unit. The duties of the functional manager, the pilot unit and the non-pilot unit are listed. The level of command where the Army develops standard type units is higher than the Air Force's. All decisions regarding the standard type units are performed at a major command level or higher using a computer model.

III. Methodology

Chapter Overview

Chapter I introduces the research question for this thesis: Are the type unit problems noted during Desert Shield/Storm (i.e., units deploying heavy, standard type units not able to perform the mission without augmentation, and non-standard type units built when standard type units were available) related to the standard type unit development procedures? To answer this question, the following research methods were employed: (1) literature review, (2) Delphi questionnaire development and distribution, and (3) data analysis. The next three paragraphs explain the sequence of each of these three steps.

a. The literature review was the first part completed. Its main purpose was to determine the current guidance and past and present use of standard type units. The literature review is presented in Chapter II.

b. Given the information found in the literature review, the questionnaire was constructed. The objectives of this questionnaire were: (1) to determine if the experts can identify problems in the type unit development process, and (2) if problems exist, what causes them. A Delphi questionnaire was distributed to Air Force experts involved in standard type unit development. The process is presented in this chapter.

c. The information collected through the literature review and the questionnaires was then analyzed for trends and consistency. The results of this analysis are presented in Chapter IV.

Literature Review

An extensive literature review was conducted to determine the major issues involved in type unit development. The review included documents from the Department of Defense, the US Government, and US government contractors. The Air Force Institute of Technology's on-line computer library center system was used to search for books and theses pertaining to the type unit subject area. Periodical indexes dating back to the 1950s were reviewed in search of relevant magazine and journal articles. Pertinent Air Force directives were identified by reviewing AFR 0-2, Air Force Directives Index. The data obtained from this effort provided the historical rationale and procedures for building a standardized unit capable of meeting a designated mission. The research also provided information on current directives for the development and use of type units, current practices, as well as the importance of good standard type units.

Personal interviews were conducted to provide additional information on the performance of type units during World War II, Korea, and Desert Shield/Storm as well

as the Army's process of developing standard unit deployment support.

The literature review was used to develop the first of two Delphi questionnaires. The purpose of the questionnaires was to answer the investigative questions that could not be answered during the literature review.

Delphi Research Method

The Delphi method was chosen because it is a general-purpose vehicle for gaining a consensus of expert opinion in problem-solving (30:4). The following sections explain this method in depth.

Delphi Strengths. Three methods exist for obtaining expert opinion: telephone, face-to-face group or individual discussions, and Delphi method. By using the Delphi method, some of the disadvantages associated with group discussion and telephone interviews are eliminated. These disadvantages include: confrontation with opposing views, inclination to close one's mind to different ideas, tendency to defend only one side, and the possibility of being swayed by the group or one individual (10:459).

The Delphi method requires three attributes for a valid consensus: anonymity, controlled feedback, and statistical group response. Without these attributes, the problems of interference, dominance of individual influence, noise, and peer pressure affect the results (9:16).

Anonymity. First, the method requires the anonymity of the panelists or experts. By having anonymity, the possibility of bias due to group influences is lessened. Normally, anonymity is achieved through the use of written questionnaires or on-line computers (8:3). This study used written questionnaires. The questionnaires were mailed to the experts and controlled by office symbols and numbers. The expert panel members' responses were not attributed to a single member, thus assuring anonymity.

Feedback. The Delphi method requires at least two questionnaires with feedback. The first questionnaire establishes independent opinion, with the second and later rounds only correlating those first answers into a group consensus (9:16). This research effort consisted of two iterations of the questionnaire.

Statistical Group Response. For a Delphi method, statistical group response is essential (30:4).

> As a representative of the group opinion, some form of statistical index is reported. For cases where the group task is to estimate a numerical quantity, the median of individual estimates has turned out to be the most useful index tried to date. Thus, there is no particular attempt to arrive at unanimity among the respondents, and a spread of opinions on the final round is the normal outcome. This is a further device to reduce group pressure toward conformity. (8:3)

The goals of statistical group response are minimizing the tendency of individuals to conform to the group, assuring that each expert's opinion is included, and eliminating idea attrition associated with face-to-face discussions. Even

though the Delphi Method strives for a group consensus, variations in responses are possible (9:16).

Delphi Summary. The Delphi method uses expertise without having to sacrifice objectivity. The Delphi method of obtaining a consensus opinion from a group of experts was deemed to be the best method for conducting this research.

> The procedure is, above all, a rapid and relatively efficient way to cream the tops of the heads of a group of knowledgeable people. In general, it involves much less effort for a participant to respond to a well-designed questionnaire than, for example, to participate in a conference or to write a paper. A Delphi exercise, properly managed, can be a highly motivating environment for respondents. (9:16-17)

Using the Delphi Method

The Delphi method was implemented using the following six steps. (1) An expert panel was chosen and contacted by phone to solicit their participation. (2) The literature review was used to develop the first round Delphi questionnaire. The questions addressed development of type units and correlated with the investigative questions of Chapter I. Also, the selection of two measurement scales was included in this step. These scales measured the quantitative responses of the experts, demographics, and comments from the panel of experts. (3) Once developed, the questionnaire was mailed to the panel members. Each questionnaire had a control number to correlate it with a panel member from a specific job discipline. (4) The response data was collected. Analysis was performed on the questions relating to Desert Shield/Storm and type unit

changes. These questions were based upon the panel's experience, not opinion. The process concluded with the building of the second round questionnaire. (5) The second round questionnaire was mailed to the panel members. Again, each questionnaire had the same control number to identify a panel member from a specific job discipline. (6) The response data was collected, and statistical analysis was performed to determine if a consensus had been achieved. The Delphi method used in this thesis is explained further.

Definition of an Expert. The determination of the panel of experts was restricted to Air Force civilian and military personnel working the standard type unit development process. The experts were chosen based upon their job, not their experience.

Expert Panel Members. Tactical Air Command F-15 and F-16 units (aviation type unit only) were chosen for the Delphi research because their type units represent some of the largest cargo requirements "moved by airlift" (24:7) for the Air Force. The panel members are all associated with F-15 units, F-16 units, and their respective Tactical Air Command functional managers.

The experts worked at different levels within the command structure and had different job disciplines (i.e., maintenance, operations, logistics). This variation of experiences provided a broader insight into the development process. Furthermore, by having the functional manager, pilot units, and non-pilot units participate, a wider

variance of responses based on individual experiences was expected.

Expert Preparation. Experts in questionnaire sampling stress the necessity of panel members knowing the importance of their responses. They state that panel members are more willing to respond if they knew their responses are needed. To underscore the member's importance, the experts suggest a "short, concise and professional cover letter" (3:58-59) accompany the first round questionnaire. The cover letter used in this research (Appendix B) stated the purpose of the research and stressed the need for a member's participation. This letter further reinforced the initial phone contact with the expert panel members.

Expert Panel Member's Demographics. Part of the first round questionnaire was designed to examine expert panel member demographics. Specifically, these questions characterized the response of panel members by command levels and experience working with type units. This information was later used to discriminate amongst responses. The demographics of those who answered the first round questionnaire are provided in Appendix D.

Delphi Questionnaire Development

The Delphi questionnaire development began after the literature review and background search was completed. The review and search provided the basis for the questions contained in the questionnaire. The first step, after the

development of the questions, was to select a scale to measure the responses.

The Measurement Scales. These scales measured the degree of the experts' preference or opinion to the type unit development process. The scale of choice for this type of study is one that focuses on an indicator of order of preference. This is an ordinal scale that shows order such as greater than and less than relationships (17:86-91). Two ordinal scales of measurement were selected for this research.

The first scale was based on rank order preferences. This scale served to evaluate the importance of current polices and possible modifications to the unit type development process.

The second scale was the Likert Summated Scale (Likert scale). This scale is particularly well suited to process of change or improvement. The possible responses to a statement of interest was either favorable or unfavorable. (17:255-256) The Likert scale, for this research, required the panel members to respond to one of five levels of agreement as indicated in Figure 2.

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

Figure 2. Five Point Likert Scale

STRONGLY AGREE (5) meant the member agreed completely with the complete statement. AGREE (4) represented a general agreement with the concepts represented by the statement. NEITHER AGREE OR DISAGREE (3) meant a neutral response. DISAGREE (2) represented a general disagreement with the concepts represented by the statement. STRONGLY DISAGREE (1) meant the member disagreed completely with the complete statement.

First Round Delphi Questionnaire

Given the literature review as well as the research question from Chapter I, 34 questions were developed for the first round questionnaire. It started with six general background questions to obtain demographic information. The second part was the rank order questions. These questions concerned the development of type units. The third section was the Likert scale questions. Again, these questions dealt with the development of type units. These sixteen question were for response by all panel members. The fourth portion of the questionnaire was designed for only those members who deployed during Desert Shield/Storm. These five questions tried to determine if (and if so, why) the unit deployed heavy. The fifth section of the questionnaire was open to all panel members. These two questions dealt with their personal experience regarding changes to the standard type unit. The last question was narrative to allow the

panel members to provide any suggestions for improvement to the current development process.

Each question was designed to answer one of the three investigative questions. A breakout of the relationship of investigative questions to questionnaire questions is provided at Appendix C.

The first round questionnaire package included a cover letter, explanation of the Delphi process, general outline of the development process, and the first round questionnaire. A copy of the package's contents is provided at Appendix B.

Thirty first round questionnaires were sent out. Of these, 16 were returned. Two units that had originally agreed to participate could not due to operational requirements. This reduced the possible number of expert panelists to 24. With 16 returned out of 24, the return rate was 67%.

Statistical Method. Two methods were used due to the different requirements to evaluate rank order questions and Likert scale questions.

First, the rank order questions were evaluated. Only those statements which most of the respondents selected as having the highest rankings were included in the second round questionnaire to obtain a consensus of which of the statements should be ranked the highest. Each statement was evaluated to determine if more than 50% of the respondents agreed that it should be ranked above the other statements.

This was done by summing the number of respondents who gave the same ranking for a particular statement. The percentages for the top three responses on each statement were added to determine if 50% or more of the respondents ranked it in the top three. Those statements meeting this criteria were included in the second questionnaire.

Second, the percentages for the Likert scale questions were calculated. The raw percentages were presented to the panel members to try to achieve a greater consensus among the panel members.

Second Round Delphi Questionnaire

The second round Delphi questionnaire had two objectives: (1) select the top rank order statements and (2) obtain a consensus on the 16 Likert scale questions.

The package sent out with the second round questionnaire included the same items as the first questionnaire. The cover letter requested that the panel member read all the comments from the first questionnaire before making a selection. It also requested that the panel member not choose option three (neither agree or disagree) without explaining why (e.g., no experience with this area). A copy of the package's contents is provided at Appendix F.

There were only 27 questions in the second questionnaire. It consisted of: 6 background, 4 rank order, 16 Likert scale, and 1 narrative. The background questions were still required for demographic purposes. All

of the comments from the first round questionnaire were included in the second round questionnaire. The Desert Shield/Storm and personal experience questions asked in questions 27 through 33 of the first questionnaire were omitted from this questionnaire because they did not ask for consensus.

Statistical Method. For the final statistical method, the median, mean, and mode were determined. The mean was used for determining the consensus.

In data gathering of this kind, "the appropriate measure of central tendency is the median" (17:89). As Delphi expert Norman C. Dalkey points outs, "the median response to a numerical estimate is at least as good as that of one half of the respondents" (8:9). The median was used as the primary measure of central tendency for the panel's responses.

The median is defined as "the middle number when the measurements are arranged in ascending (or descending) order" (25:88). The median can be calculated as follows:

1. Arrange the n measurements (total number) from the smallest to the largest.
2. If n is odd, the median is the middle number.
3. If n is even, the median is the mean (average of the middle two numbers. (25:89)

The mean is the average. The mean of a data set is "equal to the sum of the measurements divided by the number of measurements contained in the data set" (25:83).

In statistical analysis, the mode is defined as "the measurement that occurs with greatest frequency in the data set" (25:82).

Determination of a Consensus. Consensus was determined using a three rule process for the Likert scale. Once a question meets a rule, then it is determined to be a consensus. First, if one specific response (i.e., Strongly Agree or Disagree) was selected by 50% or more of the panelists, then there is a consensus. Second, if one side of the responses (i.e., Agree and Strongly Agree) was selected by 50% or more of the panelists, then there is a consensus. Third, if no side had over 50%, then a review of selections made by panel member's within a certain area of type unit responsibility was evaluated. This would reveal any bias caused by panel member's responsibilities.

For the rank order questions, a consensus was determined by using a three rule basis as well. The first rule was that if the percentage of panel experts who selected the same statement was more than 50%, consensus was established. If no consensus was established for first or second ranked items, then the second rule was applied. It was if the percentage of panel members who selected a particular statement as either first or second was higher than 50%, consensus was established, unless more than one statement met this requirement. The statement which was selected as being ranked number one in this situation would then be the statement which was ranked first by the highest

percentage of panel members. The third rule was used when the first two rules failed to establish a consensus. It evaluated the rankings according to the panel member's area of type unit responsibility. This rule would reveal any bias caused by panel members' type unit responsibilities.

Chapter Summary

This chapter presented the methodology used to collect and analyze the data pertaining to the research question and investigative questions. The method involved three parts: literature review and background search, Delphi questionnaire development and distribution, and data analysis (included in Chapter IV).

Also, the Delphi method was explained along with the development of each questionnaire and its respective statistical analysis. Chapter IV will present the findings and analysis from the questionnaires and the literature review.

IV. Analysis and Findings

Chapter Overview

The research performed for this thesis consisted of a literature review and expert opinion obtained using the Delphi Method. This chapter presents both the data collected and an analysis of the data received during the collection process to answer the research and investigative questions. The research question was: Are the type unit problems noted during Desert Shield/Storm related to the standard type unit development procedures? If there are problems in the development process, how can the system be improved to prevent them from occurring in the future?

In this chapter, the development and administration of the Delphi questionnaires are explained. Demographics of the expert panel are presented. Analysis and findings for the Desert Shield/Storm experience questions in Questionnaire One, along with general experience, and the results and analysis of the second Delphi Questionnaire are presented in Appendix I. For each question, relevant statistics and the response distribution are displayed along with the analysis of the distribution and an explanation of any significant dissenting opinions.

Finally, the findings and analysis were used to answer the Investigative Questions. The conclusions for each Investigative Question are presented. These questions

provide the basis for answering the Research Question, and the conclusions and recommendations in Chapter V.

Development of Delphi Round One

The first questionnaire, presented in Appendix B, was developed using the literature review. Chapter III provides a more detailed discription of the development of the first Delphi Questionnaire.

Administration of Delphi Round One

Using the names and phone numbers of logistics personnel (logistics plans and maintenance) from F-15 and F-16 units obtained from Headquarters Tactical Air Command, individuals were contacted by telephone to determine willingness to participate in this research. The researchers introduced themselves and the purpose of the thesis questionnaires. The names and addresses of people willing to participate as panel members were gathered. Using this information, the first questionnaire was mailed on 6 May 1992. The cover letter requested the completed questionnaire be returned no later than 20 May 1992. The last completed questionnaire was returned on 10 June 1992. Extensions were authorized due to the operational requirements of some panel members. Also, experts from two units were forced to withdraw from participation due to mission requirements.

Analysis of Delphi Round One

The responses for Questionnaire One (Appendix D) were reviewed and analyzed for areas of agreement. Analysis was performed on the background, Desert Shield/Storm experience, and general experience of panel members. These questions were not asked again in the second round questionnaire, since these areas ask for personal experience not consensus. The other portions relating to opinions of the panel members were summarized and analyzed to help develop the second questionnaire. Even when a question had a consensus (50% or more), the question was still sent back to the panel members to try to achieve a higher consensus. The panel members were allowed to leave a question blank if they had no experience in the area of the question. This ground rule prevented data from being skewed with guesses.

Demographics. The demographics presented in this section describe the panel members who responded to the first round questionnaire. No significant differences existed between the demographics of respondents to the first round versus the second round respondents. The expert panel was composed of military and civilian members who work in standard type unit development. The main active duty participants in the development process (functional manager, pilot unit, and non-pilot unit) were represented in the panel membership. These participants are located at major command, wing, and squadron levels of the Air Force. Table 1 provides the number of respondents at each level.

Table 1

Distribution of Panel Members by Organization Level

Organizational Level	Number
Major Command	5
Wing	6
Squadron	5
Total	16

Of the five major command panel members, only two are functional managers (F-15 and F-16 aviation standard type units). The other three are key personnel working with standard type units. Table 2 provides the distribution of the number of functional managers, pilot units, and non-pilot units.

Table 2

Distribution of Panel Members by Functional Area

Functional Area	Number
Functional Manager	2
Pilot Unit	6
Non-Pilot Unit	2
Other*	5
Total	15**

* both pilot and non-pilot responsibility or major command staff personnel
** one panel member did not respond to this question

The majority of the panel members are enlisted personnel. Table 3 provides a breakdown of the current grades of the panel members.

Table 3

Distribution of Panel Members by Current Grade

Current Grade	Number
Lieutenant Colonel	1
Major	2
Captain	1
Chief Master Sergeant	1
Master Sergeant	4
Staff/Technical Sergeant	5
Senior Airman/Sergeant	1
Civilian (GS-11)	1
Total	16

Most panel members have less than four years of mobility experience. In fact, the mode for panel members' mobility experience is less than two years. This statistic can be attributed to a number of factors. First of all, as part of the Air Force reorganization, several new offices were combined into the Logistics Support Squadron, thus placing individuals with little or no planning experience in the planning environment. In addition, the rank structure and experience level within the panel could stem from the requirement for personnel to cross-train into the logistics planning function. For example, one has to be a staff sergeant before being allowed to cross-train into the

enlisted logistics plans career field. The officers in the logistics plans career field are also normally cross-trained. This leads to a large number of logistics plans personnel who have general Air Force knowledge but little standard type unit experience. Table 4 shows the distribution of planning experience for the panel members.

Table 4

Distribution of Panel Members by Years of Experience

Years of Experience	Number
Less than 2 years	5
2-4 years	4
5-6 years	3
7-8 Years	1
9-10 Years	1
More than 10 Years	2
Total	16

The specific disciplines of the panel members vary and encompass all the key areas for an aviation standard type unit. These key areas included maintenance, operations, and logistics. The mode for this distribution was LSXC, with the second highest number of panel members working in LSX. Both of these offices are part of the new Logistics Support Squadron. Table 5 lists the office symbols of the panel members.

Desert Shield/Storm. The purpose of the Desert Shield/Storm questions was to examine the most recent use of

Table 5

Office Symbols of Panel Members

Office Symbol	Number
DOT	1
DOY	1
LGW	1
LGM	1
LGXCM	1
OSS	1
LSOP	1
LSX	4
LSXC	5
Total	16

standard type units and to determine if they worked properly. Deviations from the standard could be attributed to the different type of environment or to incorrect development of the standard type unit based upon the mission capability statement. These questions were designed to examine experience from panel members who deployed, not to obtain a consensus of opinion. Analysis of each question is presented in Appendix I.

Development of Delphi Round Two

The second questionnaire was developed using the results and comments on the rank order and Likert questions from the first questionnaire.

The format used in round two included 4 rank order questions and 16 Likert scale questions. The four rank order questions started with a partial statement, and

respondents were given statement options of how to best complete the statement. The number of statement options in the second round questionnaire was reduced after analysis of the first round questionnaire. The statement options in the second round questionnaire consisted of the top three or four options.

The Likert scale questions were also modified for the second questionnaire. First, the percentages for each selection made by the panel members was included under the level of agreement. Next, the comments from the panel members were included for all panel members to read. The members were asked to review the percentages and comments from the first questionnaire prior to selecting their answer. They were also asked to comment if they selected response (3), Neither Agree Nor Disagree.

The details of the second questionnaire analysis are presented in the following sections. Each question and the results are presented in a bar chart along with a table identifying the median, mode, and mean values. An analysis of the response distribution follows each results section.

Administration of Delphi Round Two

On 16 June 1992, the second round two questionnaire was mailed to F-15 and F-16 units, except for two. These two units could not participate due to operational requirements. The cover letter to the questionnaire requested completed questionnaires be returned no later than 30 June 1992. A

phone call was made to each of the units to confirm receipt, and to extend the return date due to a mailing problem. Many of the panel members were on leave or on temporary duty. The units were requested to return the questionnaires as soon as possible. The researchers thanked the panel members again for their help.

The researchers set a cut-off date of 22 July 1992 for receipt of questionnaires to be included in the analysis. As of 22 July 1992, 17 questionnaires had been returned. One expert panel member, who was unable to participate in the first round questionnaire, was able to participate in the second round. Analysis of these questionnaires is provided in Appendix I with the comments provided by the panelists in Appendix H.

Analysis of Delphi Rounds One and Two

Analysis of the responses followed the rules specified in Chapter III. If no consensus was achieved, a review was made of sub-groups within the panel membership. There were two main categories that were divided into mutually exclusive subgroups. The first category consisted of whether a panel member had standard type unit development as a primary or a secondary responsibility. The second category was based on whether the panel member was a functional manager, part of an aviation pilot unit, part of a non-pilot unit, or other (consists of those who have both

pilot and non-pilot units responsibilities or major command staff personnel).

Summary Conclusions of Investigative Questions

Analysis of the individual questions is presented in Appendix I. The relationship of questions asked on the questionnaire to the investigative questions is provided in Appendix C. Conclusions reached based upon the expert panel members' responses will be related to the corresponding question in the questionnaires (i.e., Q-10 relates to question 10).

Investigative Question #1. What are the policies and guidance for development of standard type units?

As determined through the literature review, directions for the standard type unit development is divided among several different regulations. Air Force Regulations 28-3 and 28-4 contain the majority of requirements for development. Air Force Manual 67-1 is also used if changes to tables of allowance are required.

Complete explanation of terminology and precise directions for type unit development are not in AFR 28-3 nor AFR 28-4. This is especially problematic as many of the personnel involved in standard type unit development have received no formal training. Compounding this problem is the fact that standard type development is often a secondary job requirement. Even with these problems, the panel members indicated that standard type units are required.

The panel members listed several reason why standard type units are required (Q-8, Q-21). They stated that standard type units are required for standardization and establishment of equipment requirements, and as building blocks in developing an operational base (Q-8). However, they did not agree that the current development process works correctly to provide equipment to meet the unit's mission and provided numerous reasons for this (Q-11, Q-17).

First, the panel members did not know if the process identifies the consumable items required to meet the mission (Q-12). If the system worked correctly, all required items would be identified.

Second, the panel members indicated that their responsibilities are important in the overall planning process, but did not know if their recommendations are considered in the development of the standard type unit (Q-13, Q-16). This could be due to the lack of formal feedback and length of time they said it sometimes takes to get changes to the standard package (Q-32, Q-33).

Third, there was a consensus amongst the panel members that one office of responsibility at the major command was required (Q-18). Currently by regulation, the functional manager is the single point of contact for their specific standard type unit. However, the panel members' stated that these functional managers often did not have sufficient knowledge to solve standard type unit equipment problems

(Q-23). One reason for this insufficient knowledge could stemmed from the fact that the position of functional manager is normally an additional duty. In fact, the person appointed as a functional manager usually receives no formal training on unit type development (Q-22, Q-10).

Fourth, the panel members agree that formal training is insufficient on all levels (Q-22, Q-10). There is no formal training course; personnel learn by on-the-job training. Compounding the lack of formal training is the previously noted fact that there is no single publication for type unit development.

Fifth, the non-pilot units need to provide inputs into the developmental process (Q-20). Currently, they are required to validate and recommend changes to the pilot unit on the standard type units. They are also required to coordinate on changes to the standard package. The coordination process seems to be lacking as the panel members have recommended more standard type unit changes than they have coordinated on (Q-32, Q-33). If the process worked correctly, one would expect to see the number of changes and coordinations to be equal, or there to be more coordinations. Panel members all agree that the non-pilot units need to be involved.

Last, the panel members agreed that the standard type units do not make a complete operational base when deployed to a location (Q-17). One explanation for this was all the equipment required to perform the mission was not built into

the standard type units (Q-30, Q-28). Again, they emphasize education on the process to correct this deficiency.

The panel members felt that the development process could be improved to provide better standard type units for use by all the units (Q-14). Specific recommendations for improvement are provided in the recommendation portion of Chapter V.

Conclusion. There is formal guidance which directs all levels in the development process. The formal guidance provided is either incomplete, not written clearly, or a combination of the two. Compounding the problem is the fact that several regulations must be reviewed to determine required duties, and how to perform them.

Also, the lack of formal training on the development process increases the probability of standard type units being built that do not meet mission requirements.

Investigative Question #2. Did the standard type units deployed during Desert Shield/Storm provide the units with all the required equipment to perform their designated missions?

The majority of panel members with Desert Shield/Storm experience indicated that the standard type units did not provide all of the equipment required to meet mission requirements (Q-27, Q-28, Q-29). This represented at least 60% of Tactical Air Command's F-15 and F-16 units which deployed during Desert Shield/Storm. As a result of the

lack of equipment, the standard type units required augmentation of between 11% and 50% (Q-30).

Also, whether the standard type units made a complete operational base without augmentation was examined. Standard unit types are intended to be building blocks, which if built properly and combined correctly, provide an operational base. During Desert Shield/Storm the combination of standard type units did not provide an operational base according to 64% of the panel members who belong to units that deployed (Q-29). This problem had two possible root causes. One possible cause was the failure to include base support equipment in a standard type unit. The panel members agree that all equipment required to build a base was not included in the standard type units that were deployed (Q-27). The other possible cause was a lack of knowledge or poor planning. Evidence of this can be seen in the large number of non-standard type units developed and deployed in cases where already built standard type units could have been tailored.

Conclusion. The standard type units did not provide the deployed units with all the equipment they required to perform the mission. This was demonstrated by the units deploying heavy to cover this shortfall.

Investigative Question #3. Can the standard type unit development process be changed to produce a standard type unit capable of performing the mission?

The panel members provided several suggestions how to improve the standard type unit development process. Some of the suggestions involved the process itself, some involved the personnel within the process, and one involved how the process was presented to the users. The panel members also evaluated some possible improvements presented by the researchers within the questionnaires.

One of the possible improvements posed by the researchers was to allow wing commanders the ability to determine equipment requirements (Q-7). Panel members did not think this would improve the system. They stated that the new emphasis on flexibility for wing commanders, permitting them to determine standard type unit requirements at wing level, would lead to the elimination of the standard type unit and unknown transportation requirements. This would defeat one of the purposes for standard type units, which is to determine gross transportation requirements.

Another possible solution was to have the standard type unit developed in two parts. First, a core package that contained all the standard requirements for similar type units would be developed. Next, a unit develops a unique package for its specific needs or requirements (Q-26). This part of the package, as recommended by the panel members, would be coordinated with the appropriate functional manager at major command level. This would be required to identify the transportation requirements for the unit unique equipment. This would provide a unit with the flexibility

to tailor (up or down) the standard type unit to its specific needs. Another solution was to delegate a specific weight allowance for unit unique packages (Q-9).

The panel members agreed that the current type unit development process could be improved by sending a questionnaire to affected units once a year to validate the equipment requirement and request changes to the standard (Q-9). This could increase the visibility of all units in the development process and accomplish the annual validation of the standard type units.

Next, panel members indicated there is a need to provide training on standard type unit development (Q-10). A consensus was not reached as to whether formal functional manager training, a comprehensive training booklet for all developmental responsibilities, or formal pilot unit/non-pilot unit training would best enhance the development process. There was a caveat in the recommendation for formal training; the training should be funded from outside of the units. Panel members commented that they did not have enough money in their budgets to send personnel on temporary duty for training.

The panel members overwhelmingly agreed that there should be one comprehensive publication which covers all level of standard type unit development (Q-24, Q-25). This could be either through an enhancement of Air Force Regulation 28-3 or a training handbook (Q-10). Panel members did not have a preference for either of the two

options; either would be acceptable as long as it included all levels of the development process.

The last recommended solution to preclude standard type unit development problems was to have a computer simulation that determines the standard type unit requirements (Q-19). There was no consensus of agreement that a simulation to determine unit equipment requirements was a good idea; however, only 18% of the panel member disagreed with the use of a computer. Forty-two percent of the panel members either agreed (24%) or strongly agreed (18%) that a computer should be used as long as the unit kept a voice in the process.

Conclusion. The standard type unit development process can be changed to produce a standard type unit capable of performing its designated mission. The panel members indicated that there are many problems in the process, and improvements are needed. Recommendations for improvements are provided in Chapter V.

Chapter Summary

This chapter presented the findings from the literature review and analysis of the questionnaires used to answer the investigative questions. The development and administration of each round of questionnaires was presented. Consensus was achieved on 81% of the Likert scale questions. Results for the first and second round Delphi questionnaires are

provided in Appendix D and Appendix G respectively with the analysis of each question provide in Appendix I.

The summary conclusions for the investigative questions were given. At the end of these conclusions, a single conclusion to each investigative question was provided to help answer the research question.

Chapter V provides the summary conclusions on the research question. Recommendations for improvements to the standard type unit development process along with recommendations for further research are also presented.

V: Conclusions and Recommendations

Chapter Overview

This chapter presents the conclusions of the research process and recommends some guidelines for improving the type unit development process. Additionally, recommendations for further research using this thesis as a foundation are presented.

Summary Conclusions on Research Question

Are the type unit problems noted during Desert Shield/Storm related to the standard type unit development procedures? If there are problems in the development process, how can the system be improved to prevent them from occurring in the future?

The problems that formed the basis of this research were: units deploying heavy; standard type units that were not able to perform the mission without augmentation; and non-standard type units being built when standard type units that could be tailored to meet requirements. All of these were found to be attributed to the standard type unit development process.

Conclusions: Investigative Question One. Investigative Question One (What are the policies and guidance for development of standard type units?) was answered by identifying the regulations that direct development process, and the training development personnel

receive. Poorly defined procedures combined with little or no formal training results in standard type units that are usually incapable of meeting mission requirements. This problem is often not revealed until crisis action; because, the standard type units are not tested adequately to see if they can meet mission requirements.

The opinion of the experts that the procedures to develop standard type units are poorly defined and organized can be seen in the answers and comments to Questions 24, 25 and 27 in the second round questionnaire.

There were many comments stating there is a lack of training for participants in the development process. There is no or very little formal training currently available to teach development procedures. Consequently, most participants in the process learn by on-the-job. The average number of years of experience in developing standard type units indicated by the panel members is low. This means standard type units are being developed by personnel with little experience in working with the development procedures. Questions 10, 22, and 23 in the second round questionnaire directly addressed this issue.

Conclusions: Investigative Question Two. The research to answer Investigative Question Two (Did the standard type units deployed during Desert Shield/Storm provide the units with all the required equipment to perform their designated mission?) revealed that the standard type units deployed

during Desert Shield/Storm did not provide units with the equipment required to perform their designated mission.

Most of the standard type units were tasked according to their designated mission capability statement. When the mission capability statement was altered, the equipment authorization was increased or decreased according to the change in mission (i.e., if a unit was tasked for a bare base when the type unit's mission called for an operational base, extra equipment would be authorized). This added equipment for the change was not considered as augmentation equipment in this study. When the units were tasked with the standard type unit, they required augmentation of up to 50%.

The main reasons given for this increase in equipment were that type units were developed for peacetime requirements (i.e., Operational Readiness Inspections), they were developed with the wrong equipment, and they did not consider all requirements needed to build a complete operational base. Two contributing factors determined from this research were a lack of formal training and multiple sources of guidance on the developmental process.

Conclusions: Investigative Question Three. The conclusions drawn from the questions designed to answer Investigative Question Three (Can the standard type unit development process be changed to produce a standard type unit capable of performing the mission?) indicate that there are many ways to improve the development process. Some of

the improvements involve procedural changes, and some involve clarifying the procedures. It is unclear whether most of the development problems are caused by a lack of understanding of the procedures or in the procedures themselves.

The panel members felt that standard type units are required; however, the type units are not developed to meet the mission capability statement. The break down in the development process was attributed to a lack of formal training, a lack of a knowledgeable single point of contact, and multiple sources for development guidance.

Conclusion: Research Question. The problems noted during Desert Shield/Storm were determined to be related to the standard type unit development process. Specific recommendations for improvements to the process are provided below.

Recommendations

Recommendation One. Air Force Regulation 28-3 should be rewritten with more clear, concise directions. The role and definition of the major command functional manager should be clarified. All development and change requirements need to be in this regulation.

Recommendation Two. A formal training course, or at a minimum, a comprehensive training booklet should be developed covering type unit development to include an explanation of the purpose and steps required to develop

standard type units. This should include duties and responsibilities of the functional manager, pilot unit, and non-pilot unit.

Recommendation Three. Standard type units and the building of an operational base should be tested by actually deploying units to a location and having them operate for a specified time period. Even though this would be costly, it would provide a better test of the standard type units than the current operational readiness inspections.

Recommendation Four. Validate the standard type units annually by sending a questionnaire to each tasked unit. Require them to provide comments and recommendations for improvements to the standard type units. This would ensure that all units feel part of the development process.

Further Research Recommendations

Research Recommendation One. Since the panel members were not sure if the consumables were correctly identified in the standard type unit, a study directed at how consumable are determined might be warranted.

Research Recommendation Two. One possible solution to the problems with standard type units was to use a computer simulation. This study did not determine if a computer simulation could be developed. An analysis of how the simulation could be developed, along with it accuracy should be examined. This recommendation could present a possible cost avoidance.

Research Recommendation Three. This research focused on the Air Force structure prior to the reorganization. A future study into how standard type units would be developed and deployed in the new composite wings is suggested. Will the composite wings, when deployed, make an operational base?

Research Recommendation Four. If formal training, comprehensive training booklet, or improvements to Air Force Regulation 28-3 occur, then another study into the effects of these changes on the development process should be conducted.

Appendix A: Definition of Key Terms

Allowable Load. The total load that an aircraft can transport over a given distance, taking into account weight and volume (Replaced allowable cabin loads) (15:24).

Bare Base. A base that has a runway, a taxiway, a parking area, and a source of water that can be potable (12:15).

Contingency Operations Mobility Planning and Execution System. Automated Data Processing system that provides automated support at major commands and base level for operation and mobility planning and execution actions required of the Operation, Manpower, Logistics and Personnel functions (13:A1-1-1-3).

Contingency or Contingency Operations. Operations with limited objectives. Less than general or limited war (13:A1-1-1-3).

Crisis Action Team. Command and staff personnel assembled to respond to war, and certain contingency or emergency situations that require continuous action. Its purpose is to provide continuous response during periods of increased readiness and expanded operations (13:A1-1-1-3).

Deployment. In the strategic sense, the relocation of forces to desired areas of operation (15:110).

Deployment Echelon. A capability within a Unit Type Code which should be deployed as an entity. Deployment echelons facilitate deployment planning by identifying capabilities, materiel, and personnel requirements, and the sequence of movement (13:A1-1-1-4).

Force Requirement Number. The alphanumeric code used to uniquely identify force entries in a given operation plan time-phased force and deployment data (15:149).

Joint Deployment System. A system that consists of personnel, procedures, directives, communications systems, and electronic data processing systems to directly support time-sensitive planning and execution, and to complement peacetime deliberate planning (15:197).

Limited Base. A base that is austerely staffed and normally has no permanently assigned operational tactical forces, but may possess a small force for special operations. With personnel augmentation, this base is capable of receiving deployed forces. It may have facilities for communications, air traffic control, navigational aids, maintenance, base

supply, munitions, weather, medical services, billeting, messing, transportation, and operational support. It may or may not be supported in peacetime as a satellite in a state of readiness for use by the deploying force to initiate and sustain operations. Additional support personnel and equipment must be provided (12:45).

Logistics Detail (LOGDET). The specific identification of materiel required to support a unit type code. Includes detailed data on each stock number, such as weight, dimensions, and cargo category code (13:A1-1-1-7).

Main Base (MB). A base on which all essential buildings and facilities are erected. Total organizational and intermediated maintenance capability exists for assigned weapon systems. The intermediate maintenance capability may be expanded to support specific weapon systems deployed to the MB (12:46).

Manpower and Equipment Force Packaging System (MEFPAK). Forces in terms of essential manpower and equipment requirements for contingency operations. MEFPAK, which operates in the command and control environment, in composed of two subsystems; the Manpower Force Packaging System and the Logistics Force Packaging System (12:47).

Mission Capability Statement (MISCAP). A short paragraph that describes the mission capabilities of a particular unit type code (UTC). The MISCAP contains a general mission statement, the type of bases to which the UTC can be deployed, functions included in the UTC, flying hours per month, and crew ratio (13:A1-1-1-7).

Mobility Equipment. Organization equipment authorized during peacetime that, on deployment, goes with the unit to support its planned wartime contingency mission. Mobility equipment is not war reserve material (13:A1-1-1-8).

Non-Pilot Unit. A unit with a standard UTC tasking but is not responsible for developing or reporting materiel and manpower requirements (13:A1-1-1-8).

Notional Tasking. A procedure to facilitate planning among all the Services, commands, and agencies whereby operation plan forces are expressed as standard type units as described in the type unit data file disseminated by the Joint Chiefs of Staff; no specified units are identified. Also see specified tasking AFM 11-1, volume 1 (13:A1-1-1-8).

Pilot Unit. A unit tasked to develop and manage the materiel and manpower requirements for a standard unit type code. Pilot units are selected by major commands and report the logistics detail to the major command for update of the

Logistics Force Packaging System File (AFR 28-3 further defines pilot unit responsibilities) (13:A1-1-1-8).

Shortfall. The lack of forces, equipment, personnel, materiel, or capability, apportioned to and identified as a plan requirement, that would adversely affect the command's ability to accomplish its mission (15:333).

Support Equipment. All equipment required to perform the support function, except that which is an integral part of mission equipment. It does not include any equipment required to perform mission operations functions. Support equipment includes, but is not limited to, the following categories: aerospace ground equipment; test, measurement and diagnostic equipment; tools; vehicles; construction equipment; etc., and computer software required for support equipment operations (12:73).

Time-Phased Force and Deployment Data. The computer-supported data base portion of an operation plan; it contains time-phased force data, non-unit related cargo and personnel data, and movement data for the operation plan, including;

a. In-place units.
b. Units to be deployed to support the operation plan with a priority indicating the desired sequence for their arrival at the port of debarkation.
c. Routing of forces to be deployed.
d. Movement data associated with deploying forces.
e. Estimates of non-unit related cargo and personnel movements to be conducted concurrently with the deployment of forces.
f. Estimate of transportation requirements that must be fulfilled by common-user lift resources as well as those that con be fulfilled by assigned or attached transportation resources (15:372).

Unit Type Code (UTC). A six-character alphanumeric designator that identifies a specific capability. The USAF War and Mobilization Plan, Volume 3 (WMP-3) lists the UTCs for all Air Force capabilities. UTCs are used by unified and specified commands, HQ USAF, and Joint Chiefs of Staff to identify forces required to support contingency plans. They are standardized between all units tasked for the same type deployment package in order to provide proper planning for operation plan requirements (See Pilot Unit) (13:A1-1-1-11).

Appendix B: First Questionnaire

Capt Wermund (DSN 785-8989)

UTC Development and Maintenance Questionnaire

Questionnaire Panel Participants

This questionnaire is a key part of a Master's Degree thesis being written at the Air Force Institute of Technology. The goal of the thesis is to determine if problems exist with the current UTC development process, and to suggest improvements to the process.

An important part of these research will be based on, and the use of a technique called a Delphi study. In a Delphi study, experts in a subject area are sent an initial questionnaire asking their opinions on that subject. An expert is defined as someone working in the area being studied, who hopefully has strong ideas about the problems, process and possible solutions in that area. You are considered an expert. Your opinions are important. The opinions obtained from the first questionnaire are compiled. Then a second questionnaire is sent out to the experts. The second questionnaire includes a summary of the opinions from the first questionnaire. The idea is that the experts, after reviewing the comments of other experts, will arrive at some consensus of opinion.

Please take a few minutes to answer the attached questionnaire. It should take no more than 30 minutes to complete. Participation is voluntary and anonymous. Your response will help clarify a subject on which very little research has been done. Please return this survey in the enclosed envelope NLT 20 May 1992.

Please return the completed questionnaire in the attached envelope or mail to Capt Wermund, AFIT/LSG, WPAFB OH 45433-6583 by 30 June 1992. Your participation is greatly appreciated.

DENNIS E. CAMPBELL, Ph.D
Head, Dept of Logistics Management
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

BACKGROUND INFORMATION

THIS SECTION OF THE QUESTIONNAIRE CONTAINS ITEMS DEALING WITH RESPONDENT CHARACTERISTICS. PLEASE CIRCLE THE APPROPRIATE ANSWER.

1. Are you at a _____ assignment?

   a. Squadron
   b. Wing
   c. MAJCOM
   d. Other _____

2. What is your military rank or civilian grade?

Officer	Enlisted	Civilian
a. Lt	f. E-1/4	k. GS-9/10
b. Capt	g. E-5/6	l. GS-11
c. Maj	h. E-7	m. GS-12/13
d. Lt Col	i. E-8	n. Other (specify)
e. Col	j. E-9	_____

3. How long have you been involved with mobility (UTC management)?

   a. less than 2 years
   b. 2-4 years
   c. 5-6 years
   d. 7-8 years
   e. 9-10 years
   f. more than 10 years

4. What is your office symbol (without including unit designator)? For example: LGX, RMS, etc.

   _____

5. UTC management is your _____ responsibility.

   a. Primary
   b. Secondary
   c. Other (Please specify _____)

6. _____ is my area of UTC responsibility.

   a. Functional Manager
   b. Aviation pilot unit
   c. Aviation non-pilot unit
   d. Other (Please specify _____)

RANKING OF OPINIONS REGARDING UTC DEVELOPMENT AND USE

PLEASE RANK ORDER THE FOLLOWING STATEMENTS, WITH THE RANKING OF 1 BEING THE HIGHEST, 2 BEING THE SECOND HIGHEST, ETC. YOUR RESPONSES SHOULD BE BASED YOUR EVALUATION OF EACH STATEMENT USING ALL OF YOUR MOBILITY EXPERIENCE. YOUR COMMENTS WILL BE GREATLY APPRECIATED.

7. If the new emphasis on flexibility for wing commanders allows determination of UTC requirements at wing level, this will:

___ Increase the unit's combat capability

___ Lead to unknown transportation requirements

___ Increase the execution planning requirements

___ Lead to more standardization amongst wings

___ Increase in the unit's readiness at time of tasking/execution

___ Lead to faster response time

___ Lead to elimination of standard UTCs

Comments: _____

_____

_____

PLEASE RANK ORDER THE FOLLOWING STATEMENTS, WITH THE RANKING OF 1 BEING THE HIGHEST, THE RANKING OF 2 BEING THE NEXT HIGHEST RANKING, ETC. YOUR COMMENTS WILL BE GREATLY APPRECIATED.

8. UTCs are required for:

___ Deliberate planning (theater contingency plans)

___ Standardization of Air Force capabilities

___ Provision of building blocks in developing an operational base (i.e., aviation UTC plus services, supply, transportation, hospital, others are required for an operational base)

___ Establishment of unit's deployment (equipment) requirements

___ Combining non-consumables (TA mobility code A) with consumables for a complete deployment package.

___ Establishment of the airlift and sealift requirements for United States Transportation Command

Comments:_____

_____

_____

PLEASE RANK ORDER THE FOLLOWING STATEMENTS, WITH THE RANKING OF 1 BEING THE HIGHEST, THE RANKING OF 2 BEING THE NEXT HIGHEST RANKING, ETC. YOUR COMMENTS WILL BE GREATLY APPRECIATED.

9. The current UTC development process could be improved by:

___ Sending a questionnaire once a year validating the equipment requirement and requesting changes to the standard UTC.

___ Having the MAJCOM dictate specific equipment line items and quantities a unit can deploy with.

___ Having the unit's deployable short tons be dictated by the MAJCOM functional manager and the unit determines the specific equipment required to meet the tasking.

___ Having the MAJCOM allow the unit a certain percentage of the total weight for flexibility.

___ Rotating pilot unit responsibilities on a yearly basis (so that all tasked units are involved).

Comments:_____

_____

_____

10. UTC development/maintenance could be best enhanced by improving or initiating the following type of training:

___ Formal functional manager training course

___ Formal pilot unit/non-pilot unit training course

___ Comprehensive training booklet for functional managers, pilot unit and non-pilot unit

___ No additional training is required

Comments:_____

_____

_____

THIS SECTION OFFERS SPECIFIC STATEMENTS RELATING TO STANDARD UTC (CARGO ONLY) DEVELOPMENT. PLEASE INDICATE YOUR LEVEL OF AGREEMENT WITH EACH STATEMENT BY CIRCLING THE RESPONSE ON A SCALE OF 1-5 AS SHOWN BELOW. SPACE IS PROVIDED FOR COMMENTS THAT MAY BE REQUIRED TO EXPLAIN YOUR NUMERIC RESPONSE. PLEASE CONSIDER ALL OF YOUR EXPERIENCE REGARDING UTC DEVELOPMENT WHEN DETERMINING YOUR RESPONSE.

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

11. If called upon to deploy anywhere in the world, the standard Unit Type Code (UTC) development process works correctly to identify equipment requirements that meet the unit's mission.

1 2 3 4 5

Comments:_____

_____

_____

12. The standard Unit Type Code (UTC) development process works correctly to identify consumable items required to meet the unit's mission capability/designated operational capability statement.

1 2 3 4 5

Comments:_____

_____

_____

13. Your UTC development responsibilities are important in the overall planning process.

1 2 3 4 5

Comments:_____

_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

14. UTCs are currently developed in the best possible way.

1 2 3 4 5

Comments:_____

_____

_____

15. Once a standard UTC is approved, units should not be allowed to tailor up (add equipment to the package that was not originally authorized in the approved package).

1 2 3 4 5

Comments:_____

_____

_____

16. Your opinions and recommendations are considered in the development of the standard UTC package.

1 2 3 4 5

Comments:_____

_____

_____

17. Standard UTCs combined at a deployed location make up a complete operational deployed base. (i.e., all equipment required for the base are included in the UTCs)

1 2 3 4 5

Comments:_____

_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

18. One office of primary responsibility in the Air Force at either a MAJCOM level or higher level should be responsible for the establishment of standard UTC equipment requirements.

1 2 3 4 5

Comments: _____

_____

_____

19. A computer program that simulates wartime requirements should be developed that will establish standard UTC requirements.

1 2 3 4 5

Comments: _____

_____

_____

20. Non-pilot units should have minimal inputs into UTC development.

1 2 3 4 5

Comments: _____

_____

_____

21. Standard UTCs don't work (i.e., don't relate to the way we train), so let each unit develop their equipment requirements.

1 2 3 4 5

Comments: _____

_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

22. Training on UTC development is insufficient.

1 2 3 4 5

Comments:_____

_____

_____

23. The MAJCOM functional managers have the most knowledge to solve UTC equipment problems.

1 2 3 4 5

Comments:_____

_____

_____

24. There is not enough formal guidance dealing with UTC development making it difficult to develop a good standard UTC.

1 2 3 4 5

Comments:_____

_____

_____

25. There should be one comprehensive publication which covers all levels of UTC development and responsibilities (i.e., pilot, non-pilot, functional managers).

1 2 3 4 5

Comments:_____

_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

26. Standard UTCs should be developed with a core package of equipment (universal requirements for all like units) plus a unit unique package.

1 2 3 4 5

Comments:_____

_____

_____

IF YOUR UNIT DEPLOYED TO DESERT SHIELD/STORM, PLEASE ANSWER THE FOLLOWING QUESTIONS. IF NOT, SKIP TO QUESTION NUMBER 33. USING YOUR EXPERIENCE REGARDING YOUR UNIT'S F-15 AND F-16 UTCS THAT DEPLOYED DURING DESERT SHIELD/STORM, PLEASE INDICATE YOUR LEVEL OF AGREEMENT WITH EACH STATEMENT BY CIRCLING THE RESPONSE ON A SCALE OF 1-5 AS SHOWN BELOW. SPACE IS PROVIDED FOR COMMENTS THAT MAY BE REQUIRED TO EXPLAIN YOUR NUMERIC RESPONSE.

27. All the equipment needed for your base was in the standard UTCs that deployed.

1 2 3 4 5

Comments:_____

_____

_____

28. The standard UTCs deployed to your location provided all the equipment required to perform the mission.

1 2 3 4 5

Comments:_____

_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

29. a. When all of the original UTCs tasked at your base arrived, the base required no augmentation (Consider only basic mission. Added missions should require additional UTCs and equipment.)

1 2 3 4 5

Comments:_____

_____

_____

b. Theater component command functional managers must cross-coordinate to insure common support or service equipment that supports multiple UTCs is included in at least one of the planned standard UTCs.

1 2 3 4 5

Comments:_____

_____

_____

c. Theater component commands should be directed to develop standard UTCs that provide common equipment that supports all mission standard UTCs.

1 2 3 4 5

Comments:_____

_____

_____

PLEASE CIRCLE THE OPTION THAT BEST FITS, USING YOUR EXPERIENCE REGARDING YOUR UNIT'S F-15 AND F-16 UTCS THAT DEPLOYED DURING DESERT SHIELD/STORM.

30. Your standard UTC was augmented (equipment added that should have been authorized into the standard UTC) by approximately ____ for Desert Shield/Storm.

0-10% 11-30% 31-50% 51-80% 81-100%

Comments:_____

_____

_____

31. Was your unit the host unit?

YES NO

THE FOLLOWING QUESTIONS CONCERN ALL UNITS, WHETHER OR NOT THEY PARTICIPATED IN DESERT SHIELD/STORM. PLEASE CIRCLE THE OPTION THAT BEST FITS, USING YOUR EXPERIENCE REGARDING F-15, AND F-16 UTC DEVELOPMENT (CARGO ONLY):

32. a. How many changes have you requested to the standard package (as non-pilot or as pilot unit)?

0 1-5 6-10 11-20

b. How many changes have you coordinated to the standard package as a pilot unit representative?

0 1-5 6-10 11-20

Comments:_____

_____

_____

33. On average, how long did these changes take to get approved or disapproved?

1-6 months 7-12 months 1-2 years 2+years

Comments:_____

_____

_____

NARRATIVE

PLEASE ANSWER THE FOLLOWING QUESTION REGARDING F-15 AND F-16 UTC DEVELOPMENT (CARGO ONLY). ANY SUGGESTIONS THAT YOU MAY HAVE REGARDING NON- F-15 AND F-16 UTC DEVELOPMENT (CARGO) IS ALSO WELCOME, BUT PLEASE INDICATE THAT THESE COMMENTS ARE NOT F-15 AND F-16 SPECIFIC. YOU MAY USE ADDITIONAL SPACE (ON REVERSE) IF NECESSARY.

34. Are there any improvements you can suggest that might improve the UTC development and execution process?

Comments:_____

_____

_____

_____

_____

_____

Appendix C: Relationship of Investigative Questions to Questions from the Two Delphi Questionnaires

Investigative Question One

What are the policies and guidance for development of standard type units?

Supporting Delphi Questions.

8. UTCs are required for:

___ Deliberate planning (theater contingency plans)

___ Standardization of Air Force capabilities

___ Provision of building blocks in developing an operational base (i.e., aviation UTC plus services, supply, transportation, hospital, others are required for an operational base)

___ Establishment of unit's deployment (equipment) requirements

___ Combining non-consumables (TA mobility code A) with consumables for a complete deployment package.

___ Establishment of the airlift and sealift requirements for United States Transportation Command

10. UTC development/maintenance could be best enhanced by improving or initiating the following type of training:

___ Formal functional manager training course

___ Formal pilot unit/non-pilot unit training course

___ Comprehensive training booklet for functional managers, pilot unit and non-pilot unit

___ No additional training is required

11. If called upon to deploy anywhere in the world, the standard Unit Type Code (UTC) development process works correctly to identify equipment requirements that meet the unit's mission.

12. The standard Unit Type Code (UTC) development process works correctly to identify consumable items required to meet the unit's mission capability/designated operational capability statement.

13. Your UTC development responsibilities are important in the overall planning process.

14. UTCs are currently developed in the best possible way.

16. Your opinions and recommendations are considered in the development of the standard UTC package.

17. Standard UTCs combined at a deployed location make up a complete operational deployed base. (i.e., all equipment required for the base are included in the UTCs)

18. One office of primary responsibility in the Air Force at either a MAJCOM level or higher level should be responsible for the establishment of standard UTC equipment requirements.

20. Non-pilot units should have minimal inputs into UTC development.

21. Standard UTCs don't work (i.e., don't relate to the way we train), so let each unit develop their equipment requirements.

22. Training on UTC development is insufficient.

23. The MAJCOM functional managers have the most knowledge to solve UTC equipment problems.

32. a. How many changes have you requested to the standard package (as non-pilot or as pilot unit)?

0 1-5 6-10 11-20

b. How many changes have you coordinated to the standard package as a pilot unit representative?

0 1-5 6-10 11-20

33. On average, how long did these changes take to get approved or disapproved?

1-6 months 7-12 months 1-2 years 2+years

Investigative Question Two

Did the standard type units deployed during Desert Shield/Storm provide the units with all the required equipment to perform its designated mission?

Supporting Delphi Questions.

27. All the equipment needed for your base was in the standard UTCs that deployed.

28. The standard UTCs deployed to your location provided all the equipment required to perform the mission.

29. a. When all of the original UTCs tasked at your base arrived, the base required no augmentation (Consider only basic mission. Added missions should require additional UTCs and equipment.)

b. Theater component command functional managers must cross-coordinate to insure common support or service equipment that supports multiple UTCs is included in at least one of the planned standard UTCs.

c. Theater component commands should be directed to develop standard UTCs that provide common equipment that supports all mission standard UTCs.

30. Your standard UTC was augmented (equipment added that should have been authorized into the standard UTC) by approximately ____ for Desert Shield/Storm.

0-10% 11-30% 31-50% 51-80% 81-100%

31. Was your unit the host unit?

YES NO

Investigative Question Three

Can the standard type unit development process be changed to produce a standard type unit capable of performing the mission?

Supporting Delphi Questions.

7. If the new emphasis on flexibility for wing commanders allows determination of UTC requirements at wing level, this will:

___ Increase the unit's combat capability

___ Lead to unknown transportation requirements

___ Increase the execution planning requirements

___ Lead to more standardization amongst wings

___ Increase in the unit's readiness at time of tasking/execution

___ Lead to faster response time

___ Lead to elimination of standard UTCs

9. The current UTC development process could be improved by:

___ Sending a questionnaire once a year validating the equipment requirement and requesting changes to the standard UTC.

___ Having the MAJCOM dictate specific equipment line items and quantities a unit can deploy with.

___ Having the unit's deployable short tons be dictated by the MAJCOM functional manager and the unit determines the specific equipment required to meet the tasking.

___ Having the MAJCOM allow the unit a certain percentage of the total weight for flexibility.

___ Rotating pilot unit responsibilities on a yearly basis (so that all tasked units are involved).

10. UTC development/maintenance could be best enhanced by improving or initiating the following type of training:

___ Formal functional manager training course

___ Formal pilot unit/non-pilot unit training course

___ Comprehensive training booklet for functional managers, pilot unit and non-pilot unit

___ No additional training is required

15. Once a standard UTC is approved, units should not be allowed to tailor up (add equipment to the package that was not originally authorized in the approved package).

19. A computer program that simulates wartime requirements should be developed that will establish standard UTC requirements.

24. There is not enough formal guidance dealing with UTC development making it difficult to develop a good standard UTC.

25. There should be one comprehensive publication which covers all levels of UTC development and responsibilities (i.e., pilot, non-pilot, functional managers).

26. Standard UTCs should be developed with a core package of equipment (universal requirements for all like units) plus a unit unique package.

34. Are there any improvements you can suggest that might improve the UTC development and execution process?

Appendix D: Results from the First Questionnaire

Background Information

1. Squadron: 5, Wing: 6, MAJCOM: 5.

2. a. Military: 15, Civilian: 1.

   b. Current grade:

0-5:	1
0-4:	2
0-3:	1
E-9:	1
E-7:	4
E-5/6:	5
E-1/4:	1
GS-11:	1

3. Years involved with mobility:

Less than 2 years:	5
2-4 years:	4
5-6 years:	3
7-8 years:	1
9-10 years:	1
more than 10 years:	2

Mean number is 2.769 so the average time with mobility is between 2 and 6 years.

4. Office symbols of panel members:

DOT:	1	DOY:	1
LGW:	1	LGM:	1
LGXCM:	1	LSXC:	5
LSX:	4	LSOP:	1
OSS:	1		

5. Unit type code responsibility for panel members was primary for 50%, secondary for 31%, and other for 13%. One member did not respond.

6.

Functional manager:	2
Pilot unit:	6
Non-pilot unit:	2
Other:	5
No Response	1

(other - both pilot and non-pilot unit or major command staff)

Rank Order Questions

Respondents

Question		1	2	3	4	5	7	9	13	15	16	17	18	19	24	25	26
	7-1	7	6	3	5	5	2	4	1	4	4	6	4	3	1		1
	7-2	2	2	6	6	1	6	6	5	3	1	1	2	1	7		5
	7-3	3	1	2	2	3	3	2	4	1	2	2	3	2	6		4
	7-4	5	7	7	7	7	7	1	7	7	7	7	7	4	5		6
	7-5	4	5	4	3	2	4	3	3	2	6	4	5	5	3		2
	7-6	6	4	5	4	4	5	5	6	5	5	5	6	6	2		3
Q	7-7	1	3	1	1	6	1	7	2	6	3	3	1	7	4		7
u	8-1	2	5	2	1	3	3	4	1	3	4	5	3	1	2		2
e	8-2	5	6	1	5	2	1	1	5	2	5	1	1	4	1		5
s	8-3	6	2	3	4	4	5	2	4	1	1	2	2	3	5		1
t	8-4	4	1	4	2	5	2	3	2	5	3	4	5	5	3		3
i	8-5	3	4	6	6	6	4	6	6	4	6	3	6	6	6		4
o	8-6	1	3	5	3	1	6	5	3	6	2	6	4	2	4		6
n	9-1		2	1	3	3	1	4	2	3	2	4	1	3	1		3
s	9-2		5	3	2	4	4	3	5	4	4	1	5	1	2		4
	9-3		4	4	5	2	2	1	4	1	3	2	2	2	4		2
	9-4		1	2	4	1	3	2	1	2	1	3	3	4	3		1
	9-5		3	5	1	5	5	5	3	5	5	5	4	5	5		5
	10-1	4	3	1	1	2	1	3	2	3	3	2	1	2	3		2
	10-2	3	2	3	2	1	3	1	1	2	2	1	3	3	2		1
	10-3	2	1	2	3	3	2	2	3	1	1	3	2	1	1		3
	10-4	1	4	4	4	4	4	4	4	4	4	4	4	4	4		4

Likert Questions

Respondents

		1	2	3	4	5	7	9	13	15	16	17	18	19	24	25	26
	11	2	3	5	3	2	2	3	2	1	3	5	4	5	3	1	2
	12	4	3	3	4	1	3	3	4	3	3	4	3	3	3	5	3
	13	2	3	5	4	5	4	5	4	5	4	5	5	4	4	1	5
	14	1	2	2	3	1	2	3	3	2	3	4	3	3	3	2	3
	15	5	2	2	5	4	1	1	1	2	2	1	1	5	1	2	1
Q	16	4	3	3	5	5	3	4	4	4	3	3	3	2	5	3	4
u	17	1	2	4	2	1	3	3	4	2	2	1	5	2	5	1	3
e	18	5	2	4	5	1	4	4	1	1	3	4	2	5	5	4	4
s	19	3	3	4	1	1	3	5	3	3	3	4	3	5	5	3	4
t	20	2	4	2	1	1	1	1	1	1	3	1	1	3	3	1	1
i	21	2	2	2	1	1	3	2	3	1	3	1	1	1	5	2	2
o	22	4	4	5	5	5	3	1	4	3	4	2	5	5	5	1	1
n	23	2	2	2	3	1	2	3	3	4	2	5	2	1	1	1	2
s	24	4	3	4	4	5	4	5	3	4	4	3	5	5	4	4	2
	25	4	4	4	5	5	5	5	4	4	4	5	5	5	5	4	4
	26	3	4	4	5	1	4	5	4	5	4	5	5	3	5	5	4
	27	2					5	2	1	2	2	5	2	2		2	1
	28	2					2	3	2	5	2	5	3	2		2	2
	29a	2					3	3	3	2	2	4	3	1		1	3
	29b	4					5	4	3	5	4	4		3		1	3
	29c	2					4	3	3	4	4	4	4	3		2	4

27. All the equipment needed for your base was in the standard unit type codes that deployed. They responded:

[1]	STRONGLY DISAGREE	:	2	18%
[2]	DISAGREE	:	7	64%
[3]	NEITHER	:	0	0%
[4]	AGREE	:	0	0%
[5]	STRONGLY AGREE	:	2	18%

Mean: 2.36

Consensus: Number 2 with 64% (disagree).

28. The standard unit type codes deployed to your location provided all the equipment required to perform the mission. They responded:

[1]	STRONGLY DISAGREE	:	0	0%
[2]	DISAGREE	:	7	64%
[3]	NEITHER	:	2	18%
[4]	AGREE	:	0	0%
[5]	STRONGLY AGREE	:	2	18%

Mean: 2.72

Consensus: Number 2 with 64% (disagree).

29a. When all of the original unit type codes tasked at your base arrived, the base required no augmentation (Consider only basic mission. Added missions should required additional unit type codes and equipment.) They responded:

[1]	STRONGLY DISAGREE	:	2	18%
[2]	DISAGREE	:	3	27%
[3]	NEITHER	:	5	45%
[4]	AGREE	:	1	9%
[5]	STRONGLY AGREE	:	0	0%

Mean: 2.45

Consensus: None, however only one panel member agreed with the statement.

29b. Theater component command functional managers must cross-coordinate to insure common support or service equipment that supports multiple unit type codes is included in at least one of the planned standard unit type codes. They responded:

[1]	STRONGLY DISAGREE:	1	10%
[2]	DISAGREE :	0	0%
[3]	NEITHER :	3	30%
[4]	AGREE :	4	40%
[5]	STRONGLY AGREE :	2	20%

Mean: 3.6

Consensus: Numbers 4 and 5 received 60% (40% agree and 20% strongly agree) with only one member strongly disagreeing.

29c. Theater component commands should be directed to develop standard unit type codes that provide common equipment that supports all mission standard unit type codes. They responded:

[1]	STRONGLY DISAGREE:	0	0%
[2]	DISAGREE :	2	18%
[3]	NEITHER :	3	27%
[4]	AGREE :	6	55%
[5]	STRONGLY AGREE :	0	0%

Mean: 3.36

Consensus: Number 4 with 54.5% (agree).

30. Your standard unit type code was augmented (equipment added that should have been authorized into the standard unit type code) by approximately _____ for Desert Shield/Storm. They responded:

[1]	0-10%:	4	40%
[2]	11-30%:	3	30%
[3]	31-50%:	3	30%
[4]	51-80%:	0	0%
[5]	81-100%:	0	0%

Mean: 1.9 (just under 11-30%)

Consensus: None, however at least 60% of the units required augmentation between 11 and 50 percent.

31. Was your unit the host unit? They responded:

Yes:	6	60%
No:	4	40%

Unit Type Code Approval Experience

32a. The number of changes to the standard package that the panel has requested are:

[1]	0:	3	23%
[2]	1-5:	4	31%
[3]	6-10:	4	31%
[4]	11-20:	2	15%

Mean - 2.38 or between 1 and 10 changes.

32b. The number of changes to the standard package that the panel has coordinated on are:

[1]	0:	5	42%
[2]	1-5:	4	33%
[3]	6-10:	1	8%
[4]	11-20:	2	17%

Mean - 2.00 or between 1 and 5 changes.

33. Length of time it took for approval:

[1]	1-6 months:	6	50%
[2]	7-12 months:	3	25%
[3]	1-2 years:	3	25%

Mean - 1.75 or within the year.

7. If the new emphasis on flexibility for wing commanders allows determination of UTC requirements at wing level, this will:

___ Increase the unit's combat capability

___ Lead to unknown transportation requirements

___ Increase the execution planning requirements

___ Lead to more standardization amongst wings

___ Increase in the unit's readiness at time of tasking/execution

___ Lead to faster response time

___ Lead to elimination of standard UTCs

Comments:

- since one of the main uses of the LOGDET is to identify gross movement requirements, giving units total freedom would probably boost the requirements through the roof.

- at this time the standard UTCs provide a baseline level, that is understood at all levels of command. Each unit may tailor the UTC to their specific requirements.

- although you have wings with same weapon systems, individual wing commanders will determine what goes in what order.

- although it will also cause an increase in budget requirements as CCs want to "reserve" mobility equipment and not use it for peacetime causing duplicate items on-hand.

8. UTCs are required for:

___ Deliberate planning (theater contingency plans)

___ Standardization of Air Force capabilities

___ Provision of building blocks in developing an operational base (i.e., aviation UTC plus services, supply, transportation, hospital, others are required for an operational base)

___ Establishment of unit's deployment (equipment) requirements

___ Combining non-consumables (TA mobility code A) with consumables for a complete deployment package.

___ Establishment of the airlift and sealift requirements for United States Transportation Command

Comments: None.

9. The current UTC development process could be improved by:

___ Sending a questionnaire once a year validating the equipment requirement and requesting changes to the standard UTC.

___ Having the MAJCOM dictate specific equipment line items and quantities a unit can deploy with.

___ Having the unit's deployable short tons be dictated by the MAJCOM functional manager and the unit determines the specific equipment required to meet the tasking.

___ Having the MAJCOM allow the unit a certain percentage of the total weight for flexibility.

___ Rotating pilot unit responsibilities on a yearly basis (so that all tasked units are involved).

Comments:

- each unit should respond once a year on a given schedule with the total tonnage per UTC. Airlift can be figured on this schedule and matched with other units with like UTCs to insure some continuity.
- all this is a waste of time
- rotating is not the answer. We have a hard enough time getting pilot units to report on time.
- establish a maximum quantity of each piece of equipment/item, let units (wing/squadron) determine actual (as low as "none required") quantities. Forward to MAJCOM for airlift planners.

10. UTC development/maintenance could be best enhanced by improving or initiating the following type of training:

___ Formal functional manager training course

___ Formal pilot unit/non-pilot unit training course

___ Comprehensive training booklet for functional managers, pilot unit and non-pilot unit

___ No additional training is required

Comments:

- functional manager training course given to key personnel in 661XX career field would be ideal, also include a combat plans person.
- we put out articles in our quarterly digest to help units as well as training handouts. It isn't enough--they need formal training.
- no training exists currently. As a minimum a handout should be published covering both functional manager and pilot/non-pilot unit responsibilities. Even a one week short course would help (AFIT or ATC funded!) We'll never get to attend otherwise!

11. If called upon to deploy anywhere in the world, the standard Unit Type Code (UTC) development process works correctly to identify equipment requirements that meet the unit's mission.

Comments:

- if that's true, why were wing commanders wanting to add all but the kitchen sink during Desert Shield?
- additional cargo is necessary for bare base operations, chemical warfare equipment played a big part in Desert Shield.
- the standard UTC does not take into account local unit needs or the locations the UTC might go nor LIMFACs such as limited airlift or ACL on airlift.
- Desert Storm caused number Z99 UTCs with little MAJCOM guidance to fill them with. Barely had a MISCAP for them!

12. The standard Unit Type Code (UTC) development process works correctly to identify consumable items required to meet the unit's mission capability/designated operational capability statement.

Comments:

- some pilot units don't realize they should add consumables into the standard UTC that may affect compliance with the MISCAP.
- fighter wings have a certain amount of different consumable items they require.
- needs more inputs from units. Too many consumables are listed that are no longer used or the quantities are too

high. But non-pilot units don't take the UTC program seriously enough and don't provide good (any) inputs.

13. Your UTC development responsibilities are important in the overall planning process.

Comments:

- if we don't report the MAJCOM's UTCs to Air Staff, they don't get the information for the TUCHA.

14. UTCs are currently developed in the best possible way.

Comments:

- from functional managers down to the pilot units, we need formal training to teach people everything from why to how to build UTCs.
- a better training program and more participation from the fighter squadrons could enhance the system greatly.
- non-pilot units need more input at initial stage.
- non-pilot units don't take the program seriously enough and don't provide good (any) inputs.

15. Once a standard UTC is approved, units should not be allowed to tailor up (add equipment to the package that was not originally authorized in the approved package).

Comments:

- if an item is 'truly' needed it should be added on, but it must be approved by the MAJCOM functional manager.
- packages have to be tailored because of different packing containers and additional requirements at bare base locations.
- equipment differences and pilot units who don't bother to review TA changes often drive non-pilot units to this.
- the units need the flexibility to do both.
- they should be able to add equipment if coordinated with MAJCOM or CTF, etc.

16. Your opinions and recommendations are considered in the development of the standard UTC package.

Comments:

- I get calls from pilot units almost daily as well as functional managers.

17. Standard UTCs combined at a deployed location make up a complete operational deployed base. (i.e., all equipment required for the base are included in the UTCs)

Comments:

- only in a perfect world would this happen. If all UTCs were developed correctly, I might agree.
- many UTCs are lacking (i.e., 3FKL0 has flight surgeon and med techs but little medical equipment to support 400+ personnel.).

18. One office of primary responsibility in the Air Force at either a MAJCOM level or higher level should be responsible for the establishment of standard UTC equipment requirements.

Comments:

- even with all the problems with pilot units, they are the people who know what's best when it comes to developing a UTC to be capable of performing a specified mission.
- functional managers have the expertise for their areas. They need to continue supporting/validating their UTCs.

19. A computer program that simulates wartime requirements should be developed that will establish standard UTC requirements.

Comments:

- the units should have a say in it.
- I'm not convinced computer simulations/models give the real picture, but due to budgetary constraints they are better than nothing.

20. Non-pilot units should have minimal inputs into UTC development.

Comments:

- non-pilot units should actively participate in UTC development. They always will catch things pilot units miss.
- non-pilot units need to be more involved and they need to be in touch with the pilot unit.
- non-pilot units have to many restrictions and are affected by it. Inputs for development need to come from all MDS units.
- if anything, maximum inputs.
- crossfeed information from all like units will be instrumental in developing a program that can effectively be used by all.
- all units with the same MDS should have inputs to their UTCs.

21. Standard UTCs don't work (i.e., don't relate to the way we train), so let each unit develop their equipment requirements.

Comments:

- the units need to have input in the process.
- again, this could drive airlift requirements through the roof.
- we need some standardization for deliberate planning and transport.

22. Training on UTC development is insufficient.

Comments:

- Amen!
- the planners need all the training they can get (includes: exercise, informal and formal training, and real world deployments).
- among 66XX/661X0s training is average. Other AFSCs need some form of introduction to it (especially 40XX career field).

23. The MAJCOM functional managers have the most knowledge to solve UTC equipment problems.

Comments:

- functional managers from the fighter wings are more aware of equipment problems.
- most of them are clue-less!
- they can definitely resolve issues for the wing/sqdn when necessary.

24. There is not enough formal guidance dealing with UTC development making it difficult to develop a good standard UTC.

Comments:

- there may be regulatory guidance, but no clearly written how-to-do-it manual for newcomers such as myself.
- this is why the automation group at the Worldwide Mobility Conference wanted to spell out, in detail, the procedures in AFR 28-3. Even the new draft regulation doesn't say enough. AFLMC is "studying" the problems. What a joke!
- no training exists currently. As a minimum a handbook should be published covering both functional manager and pilot/non-pilot units responsibilities. Even a one week short course would help.

25. There should be one comprehensive publication which covers all levels of UTC development and responsibilities (i.e., pilot, non-pilot, functional managers).

Comments:

- fix AFR 28-3.
- As a minimum a handbook should be published covering both functional manager and pilot/non-pilot unit responsibilities.

26. Standard UTCs should be developed with a core package of equipment (universal requirements for all like units) plus a unit unique package.

Comments:

- this is what happens now and it messes with airlift requirements/allocations.
- units should be able to add equipment if coordinated with MAJCOM or CTF, etc.

27. All the personnel and equipment needed for your base were in the standard UTCs deployed.

Comments:

- most UTCs were built for peace time war against CVI/UEI/ORI, per upper levels of management to enable faster generations/regenerations. Reality hit in, we need a lot more for real war than we have now.
- disaster preparedness was not well equipped.
- no chemical warfare, communications package.
- only 50% of authorized equipment was deployed - due to tasking only 12 F-16s out of a UTC for 24 PAA.
- We were tasked with F-16 UTC's that we had not been tasked with under our older OPLAN's. Had to improvise a lot.

28. The standard UTCs deployed to your location provided all the equipment required to perform their mission.

Comments:

- a lot had to be shipped due to not being loaded or tasked by higher HQ.
- no provision for establishing off-base toxic-free areas.
- short equipment in the communications package.
- most UTCs were "Z99" non-standard packages.

29. a. When all the original UTCs tasked at your base arrived, the base required no augmentation. (Consider only

basic mission. Added missions should require additional UTCs and equipment.)

Comments:

- we needed CE to add more tents to accommodate us.

b. Theater component command functional managers must cross-coordinate to insure common support or service equipment that supports multiple UTCs is include in at least ne of the planned standard UTCs.

c. Theater component commands should be directed to develop standard UTCs that provide common equipment that supports all mission standard UTCs.

Comments: (b,c)

NONE WERE PROVIDED.

30. Your standard UTC was augmented by approximately ____ for deployed cargo.

0-10% 11-30% 31-50% 51-80% 81-100%

Comments:

- most UTCs were built for peace time war against CVI/UEI/ORI, per upper levels of management to enable faster generations/regenerations. Reality hit in, we need a lot more for real war than we have now.

31. Was your unit the host unit?

YES NO

32. a. How many changes have you requested to the standard package?

0 1-5 6-10 11-20

b. How many changes have you coordinated to the standard package as a pilot unit representative?

0 1-5 6-10 11-20

Comments:

- We're unique! We designed the 3FKL1 and 2 UTC's for our base only. There is no other user of those UTC's in USAFE and it doesn't apply to CONUS units.

33. On average, how long did these changes take to get approved or disapproved?

1-6 months 7-12 months 1-2 years 2+years

Comments:

- Due to coordination with on-base units only.

34. Are there any changes you can suggest that might improve the UTC development and execution process?

Comments:

- mission capabilities, DOC statements and hard to read table of allowances (TAs) make it very difficult to match personnel/equipment into standard UTCs. For aviation UTCs there should be only one TA per weapon system, and that TA should be for mobility requirements.
- airflow requirements need work. One unit received DC-8 aircraft which caused a lot of additional work. Item managers need to work smarter on equipment shortages.
- pilot units do work with different MDS. Makes it difficult for users.
- let the Logistic Planners have more flexibility in their job, and the bottom line, don't let your OPs people do all the work. The <u>biggest</u> problem for any deployable UTC or deployment is not being involved from the beginning to end of planning of a deployment. Use your resources like they should be used, and if you don't, then get rid of the planner's AFSC (661X0).
- having face to face meetings between the MAJCOM functional manager, pilot units and affected non-pilot units. All must work closely together.
- cut the 4 month time lag at Air Staff to approve new UTCs.
- establish a UTC manager in each LGX.

Appendix F: Second Questionnaire

LSM (Capt Wermund, DSN 785-8989)

Unit Type Code (UTC) Development and Maintenance Questionnaire

Research Panel Member

Thank you for your continued support for this research effort. Let me remind you that this questionnaire is a key part of a Master's Degree thesis being written at the Air Force Institute of Technology. The goal of this thesis is to determine if problems exist with the current UTC development process and to suggest improvements to the process.

The research method used for this study is the Delphi technique. This technique uses a process of iterative questioning to develop a consensus of expert opinion. The attached questionnaire is the second iteration of the process.

In preparing this questionnaire, the results from the first questionnaire response pool were combined for each item. The attached questionnaire registers your level of agreement with the consensus developed from the first iteration.

The second questionnaire includes a summary of the opinions and responses listed in percentages from the first questionnaire. The rank order questions have been reduced to the top three or four based upon the first questionnaire responses.

Please review the comments from the first questionnaire before making your selection. When making your selection, please try to limit the number of "Neither Agree nor Disagree". If you must select this option, please state why in the comment section (e.g., Not familiar with this issue.)

I fully understand the demands your primary job places on your time. However, I ask your assistance in completing this last iteration of this project.

Please return the completed questionnaire in the attached envelope or mail to Capt Wermund, AFIT/LSG, WPAFB OH 45433-6583 by 30 June 1992. Your participation is greatly appreciated.

DENNIS E. CAMPBELL, Ph.D
Head, Dept of Logistics Management
School of Systems and Logistics

2 Atch
1. Questionnaire
2. Return Envelope

BACKGROUND INFORMATION

THIS SECTION OF THE QUESTIONNAIRE CONTAINS ITEMS DEALING WITH RESPONDENT CHARACTERISTICS. PLEASE CIRCLE THE APPROPRIATE ANSWER.

1. Are you at a _____ assignment?

   a. Squadron
   b. Wing
   c. MAJCOM
   d. Other _____

2. What is your military rank or civilian grade?

Officer	Enlisted	Civilian
a. Lt	f. E-1/4	k. GS-9/10
b. Capt	g. E-5/6	l. GS-11
c. Maj	h. E-7	m. GS-12/13
d. Lt Col	i. E-8	n. Other (specify)
e. Col	j. E-9	_____

3. How long have you been involved with mobility (UTC management)?

   a. less than 2 years
   b. 2-4 years
   c. 5-6 years
   d. 7-8 years
   e. 9-10 years
   f. more than 10 years

4. What is your office symbol (without including unit designator)? For example: LGX, RMS, etc.

   _____

5. UTC management is your _____ responsibility.

   a. Primary
   b. Secondary
   c. Other (Please specify _____)

6. _____ is my area of UTC responsibility.

   a. Functional Manager
   b. Aviation pilot unit
   c. Aviation non-pilot unit
   d. Other (Please specify _____)

RANKING OF OPINIONS REGARDING UTC DEVELOPMENT AND USE

PLEASE RANK ORDER THE FOLLOWING STATEMENTS, WITH THE RANKING OF 1 BEING THE HIGHEST, 2 BEING THE SECOND HIGHEST, ETC. PLEASE ONLY USE EACH NUMBER ONCE. YOUR RESPONSES SHOULD BE BASED ON YOUR EVALUATION OF EACH STATEMENT USING ALL OF YOUR MOBILITY EXPERIENCE. YOUR COMMENTS WILL BE GREATLY APPRECIATED.

AFTER READING THE COMMENTS OBTAINED FROM THE FIRST QUESTIONNAIRE, PLEASE MARK YOUR RESPONSE.

7. If the new emphasis on flexibility for wing commanders allows determination of UTC requirements at wing level, this will:

NOTE: USE NUMBERS 1, 2, OR 3.

___ Lead to unknown transportation requirements

___ Increase the execution planning requirements

___ Lead to elimination of standard UTCs

Comments:

- since one of the main uses of the LOGDET is to identify gross movement requirements, giving units total freedom would probably boost the requirements through the roof.
- at this time the standard UTCs provide a baseline level, that is understood at all levels of command. Each unit may tailor the UTC to their specific requirements.
- although you have wings with same weapon systems, individual wing commanders will determine what goes in what order.
- although it will also cause an increase in budget requirements as CCs want to "reserve" mobility equipment and not use it for peacetime causing duplicate items on-hand.

Comments:_____

_____

PLEASE RANK ORDER THE FOLLOWING STATEMENTS, WITH THE RANKING OF 1 BEING THE HIGHEST, THE RANKING OF 2 BEING THE NEXT HIGHEST RANKING, ETC. PLEASE ONLY USE EACH NUMBER ONCE. AFTER READING THE COMMENTS OBTAINED FROM THE FIRST QUESTIONNAIRE, PLEASE MARK YOUR RESPONSE. YOUR COMMENTS WILL BE GREATLY APPRECIATED.

8. UTCs are required for:

NOTE: USE NUMBERS 1, 2, 3, OR 4.

___ Deliberate planning (theater contingency plans)

___ Standardization of Air Force capabilities

___ Provision of building blocks in developing an operational base (i.e., aviation UTC plus services, supply, transportation, hospital, and others are required for an operational base)

___ Establishment of unit's deployment (equipment) requirements

Comments: None.

Comments:_____

_____

PLEASE RANK ORDER THE FOLLOWING STATEMENTS, WITH THE RANKING OF 1 BEING THE HIGHEST, THE RANKING OF 2 BEING THE NEXT HIGHEST RANKING, ETC. PLEASE ONLY USE EACH NUMBER ONCE. AFTER READING THE COMMENTS OBTAINED FROM THE FIRST QUESTIONNAIRE, PLEASE MARK YOUR RESPONSE. YOUR COMMENTS WILL BE GREATLY APPRECIATED.

9. The current UTC development process could be improved by:

NOTE: USE NUMBERS 1, 2, OR 3.

___ Sending a questionnaire once a year validating the equipment requirement and requesting changes to the standard UTC.

___ Having the unit's deployable short tons be dictated by the MAJCOM functional manager and the unit determines the specific equipment required to meet the tasking.

___ Having the MAJCOM allow the unit a certain percentage of the total weight for flexibility.

Comments:

- each unit should respond once a year on a given schedule with the total tonnage per UTC. Airlift can be figured on this schedule and matched with other units with like UTCs to insure some continuity.
- all this is a waste of time
- rotating is not the answer. We have a hard enough time getting pilot units to report on time.
- establish a maximum quantity of each piece of equipment/item, let units (wing/sqdn) determine actual (as low as "none required") quantities. Forward to MAJCOM for airlift planners.

Comments:_____

_____

PLEASE RANK ORDER THE FOLLOWING STATEMENTS, WITH THE RANKING OF 1 BEING THE HIGHEST, THE RANKING OF 2 BEING THE NEXT HIGHEST RANKING, ETC. PLEASE ONLY USE EACH NUMBER ONCE. AFTER READING THE COMMENTS OBTAINED FROM THE FIRST QUESTIONNAIRE, PLEASE MARK YOUR RESPONSE. YOUR COMMENTS WILL BE GREATLY APPRECIATED.

10. UTC development/maintenance could be best enhanced by improving or initiating the following type of training:

NOTE: USE NUMBERS 1, 2, OR 3.

___ Formal functional manager training course

___ Formal pilot unit/non-pilot unit training course

___ Comprehensive training booklet for functional managers, pilot unit and non-pilot unit

Comments:

- functional manager training course given to key personnel in 661XX career field would be ideal, also include a combat plans person.
- we put out articles in our quarterly digest to help units as well as training handouts. It isn't enough--they need formal training.
- no training exists currently. As a minimum a handout should be published covering both functional manager and pilot/non-pilot unit responsibilities. Even a one week short course would help (AFIT or ATC funded!) We'll never get to attend otherwise!

Comments:_____

_____ _____

THIS SECTION OFFERS SPECIFIC STATEMENTS RELATING TO STANDARD UTC (CARGO ONLY) DEVELOPMENT. PLEASE INDICATE YOUR LEVEL OF AGREEMENT WITH EACH STATEMENT BY CIRCLING THE RESPONSE ON A SCALE OF 1-5 AS SHOWN BELOW. SPACE IS PROVIDED FOR COMMENTS THAT MAY BE REQUIRED TO EXPLAIN YOUR NUMERIC RESPONSE. PLEASE CONSIDER ALL OF YOUR EXPERIENCE REGARDING UTC DEVELOPMENT WHEN DETERMINING YOUR RESPONSE.

THE COMMENTS AND PERCENTAGES WERE OBTAINED FROM PANEL MEMBERS WHO ANSWERED THE FIRST QUESTIONNAIRE. THE COMMENT AND PERCENTAGES ARE PROVIDED FOR YOUR REVIEW. FROM THE FIRST QUESTIONNAIRE, THE PERCENTAGES ARE PROVIDED FROM HOW EACH NUMBER WAS SELECTED FOR EACH QUESTION (I.E., QUESTION 11, 7% CIRCLED 1, 36% CIRCLED 2, AND SO ON). AFTER READING THE COMMENTS AND LOOKING AT THE PREVIOUS ANSWERS OBTAINED FROM THE FIRST QUESTIONNAIRE, PLEASE MARK YOUR RESPONSE.

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

11. If called upon to deploy anywhere in the world, the standard Unit Type Code (UTC) development process works correctly to identify equipment requirements that meet the unit's mission.

1	2	3	4	5
13%	31%	31%	6%	19%

Comments:

- if that's true, why were wing commanders wanting to add all but the kitchen sink during Desert Shield?
- additional cargo is necessary for bare base operations, chemical warfare equipment played a big part in Desert Shield.
- the standard UTC does not take into account local unit needs or the locations the UTC might go nor LIMFACs such as limited airlift or ACL on airlift.
- Desert Storm caused number Z99 UTCs with little MAJCOM guidance to fill them with. Barely had a MISCAP for them!

Comments:_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

12. The standard Unit Type Code (UTC) development process works correctly to identify consumable items required to meet the unit's mission capability/designated operational capability statement.

1	2	3	4	5
6%	0%	63%	25%	6%

Comments:

- some pilot units don't realize they should add consumables into the standard UTC that may affect compliance with the MISCAP.
- fighter wings have a certain amount of different consumable items they require.
- needs more inputs from units. Too many consumables are listed that are no longer used or the quantities are too high. But non-pilot units don't take the UTC program seriously enough and don't provide good (any) inputs.

Comments:_____

_____

13. Your UTC development responsibilities are important in the overall planning process.

1	2	3	4	5
6%	6%	6%	38%	44%

Comments:

- if we don't report the MAJCOM's UTCs to Air Staff, they don't get the information for the TUCHA.

Comments:_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

14. UTCs are currently developed in the best possible way.

1	2	3	4	5
13%	31%	50%	6%	0%

Comments:

- from functional managers down to the pilot units, we need formal training to teach people everything from why to how to build UTCs.
- a better training program and more participation from the fighter squadrons could enhance the system greatly.
- non-pilot units need more input at initial stage.
- non-pilot units don't take the program seriously enough and don't provide good (any) inputs.

Comments:_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

15. Once a standard UTC is approved, units should not be allowed to tailor up (add equipment to the package that was not originally authorized in the approved package).

1	2	3	4	5
44%	31%	0%	6%	19%

Comments:

- if an item is 'truly' needed it should be added on, but it must be approved by the MAJCOM functional manager.
- packages have to be tailored because of different packing containers and additional requirements at bare base locations.
- equipment differences and pilot units who don't bother to review TA changes often drive non-pilot units to this.
- the units need the flexibility to do both.
- they should be able to add equipment if coordinated with MAJCOM or CTF, etc.

Comments:_____

_____

16. Your opinions and recommendations are considered in the development of the standard UTC package.

1	2	3	4	5
0%	6%	44%	31%	19%

Comments:

- I get calls from pilot units almost daily as well as functional managers.

Comments:_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

17. Standard UTCs combined at a deployed location make up a complete operational deployed base. (i.e., all equipment required for the base are included in the UTCs)

1	2	3	4	5
25%	31%	19%	13%	13%

Comments:

- only in a perfect world would this happen. If all UTCs were developed correctly, I might agree.
- many UTCs are lacking (i.e., 3FKL0 has flight surgeon and med techs but little medical equipment to support 400+ personnel.).

Comments:_____

_____

18. One office of primary responsibility in the Air Force at either a MAJCOM level or higher level should be responsible for the establishment of standard UTC equipment requirements.

1	2	3	4	5
19%	13%	6%	38%	25%

Comments:

- even with all the problems with pilot units, they are the people who know what's best when it comes to developing a UTC to be capable of performing a specified mission.
- functional managers have the expertise for their areas. They need to continue supporting/validating their UTCs.

Comments:_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

19. A computer program that simulates wartime requirements should be developed that will establish standard UTC requirements.

1	2	3	4	5
13%	0%	50%	19%	19%

Comments:

- the units should have a say in it.
- I'm not convinced computer simulations/models give the real picture, but due to budgetary constraints they are better than nothing.

Comments:_____

_____

20. Non-pilot units should have minimal inputs into UTC development.

1	2	3	4	5
63%	13%	19%	6%	0%

Comments:

- non-pilot units should actively participate in UTC development. They always will catch things pilot units miss.
- non-pilot units need to be more involved and they need to be in touch with the pilot unit.
- non-pilot units have to many restrictions and are affected by it. Inputs for development need to come from all MDS units.
- if anything, maximum inputs.
- crossfeed information from all like units will be instrumental in developing a program that can effectively be used by all.
- all units with the same MDS should have inputs to their UTCs.

Comments:_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

21. Standard UTCs don't work (i.e., don't relate to the way we train), so let each unit develop their equipment requirements.

1	2	3	4	5
38%	38%	19%	0%	6%

Comments:

- the units need to have input in the process.
- again, this could drive airlift requirements through the roof.
- we need some standardization for deliberate planning and transport.

Comments:_____

_____

22. Training on UTC development is insufficient.

1	2	3	4	5
19%	6%	13%	25%	38%

Comments:

- Amen!
- the planners need all the training they can get (includes: exercise, informal and formal training, and real world deployments).
- among 66XX/661X0s training is average. Other AFSCs need some form of introduction to it (especially 40XX career field).

Comments:_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

23. The MAJCOM functional managers have the most knowledge to solve UTC equipment problems.

1	2	3	4	5
25%	44%	19%	6%	6%

Comments:

- functional managers from the fighter wings are more aware of equipment problems.
- most of them are clue-less!
- they can definitely resolve issues for the wing/sqdn when necessary.

Comments:_____

_____

24. There is not enough formal guidance dealing with UTC development making it difficult to develop a good standard UTC.

1	2	3	4	5
0%	6%	19%	50%	25%

Comments:

- there may be regulatory guidance, but no clearly written how-to-do-it manual for newcomers such as myself.
- this is why the automation group at the Worldwide Mobility Conference wanted to spell out, in detail, the procedures in AFR 28-3. Even the new draft regulation doesn't say enough. AFLMC is "studying" the problems. What a joke!
- no training exists currently. As a minimum a handbook should be published covering both functional manager and pilot/non-pilot units responsibilities. Even a one week short course would help.

Comments:_____

_____

1	2	3	4	5
STRONGLY DISAGREE		NEITHER AGREE NOR DISAGREE		STRONGLY AGREE

25. There should be one comprehensive publication which covers all levels of UTC development and responsibilities (i.e., pilot, non-pilot, functional managers).

1	2	3	4	5
0%	0%	0%	50%	50%

Comments:

- fix AFR 28-3.
- As a minimum a handbook should be published covering both functional manager and pilot/non-pilot unit responsibilities.

Comments:_____

_____

26. Standard UTCs should be developed with a core package of equipment (universal requirements for all like units) plus a unit unique package.

1	2	3	4	5
6%	0%	13%	38%	44%

Comments:

- this is what happens now and it messes with airlift requirements/allocations.
- units should be able to add equipment if coordinated with MAJCOM or CTF, etc.

Comments:_____

_____

27. Are there any changes you can suggest that might improve the UTC development and execution process?

Comments:

- mission capabilities, DOC statements and hard to read table of allowances (TAs) make it very difficult to match personnel/equipment into standard UTCs. For aviation UTCs there should be only one TA per weapon system, and that TA should be for mobility requirements.
- airflow requirements need work. One unit received DC-8 aircraft which caused a lot of additional work. Item managers need to work smarter on equipment shortages.
- pilot units do work with different MDS. Makes it difficult for users.
- let the Logistic Planners have more flexibility in their job, and the bottom line, don't let your OPs people do all the work. The biggest problem for any deployable UTC or deployment is not being involved from the beginning to end of planning of a deployment. Use your resources like they should be used, and if you don't, then get rid of the planner's AFSC (661X0).
- having face to face meetings between the MAJCOM functional manager, pilot units and affected non-pilot units. All must work closely together.
- cut the 4 month time lag at Air Staff to approve new UTCs.
- establish a UTC manager in each LGX.

Comments:_____

_____

_____

_____

_____

Appendix G: Results from the Second Questionnaire

Rank Order Questions

Respondents

Questions	1	2	3	4	5	6	7	9	13	15	16	17	18	19	24	25	26
7-1	3	3	1	1	2	1	2	3	1	1	1	1	1	2	3	3	2
7-2	2	2	3	3	1	2	1	2	3	2	3	3	3	3	1	1	1
7-3	1	1	2	2	3	3	3	1	2	3	2	2	2	1	2	2	3
8-1	1	2	3	2	4	3	4	4	3	1	3	3	3	3	4	3	1
8-2	4	4	4	1	2	2	2	1	4	4	1	1	1	4	1	4	2
8-3	2	3	1	3	1	1	3	2	1	3	2	2	4	2	3	1	4
8-4	3	1	2	4	3	4	1	3	2	2	4	4	2	1	2	2	3
9-1	2	1		2	1	1	1		2	1	1	1	2	1	1	2	2
9-2	3	3		3	3	3	2		3	3	2	2	3	3	2	3	3
9-3	1	2		1	2	2	3		1	2	3	3	1	2	3	1	1
10-1	3	1	1	3	2	2	1	2	1	2	1	2	2	3	2	1	3
10-2	1	3	2	1	1	3	3	1	3	3	2	3	1	1	3	3	2
10-3	2	2	3	2	3	1	2	3	2	1	3	1	3	2	1	2	1

Likert Questions

Respondents

Questions		1	2	3	4	5	6	7	9	13	15	16	17	18	19	24	25	26
	11	2	2	4	3	2	2	3	2	4	4	5	1	2	1	4	4	4
	12	3	3		4	4	3	4	3	3	3	3	1	3	3	4	4	4
	13	4	4	5	5	2	5	2	5	4	4	5	5	4	4	4	4	5
Q	14	1	4	4	1	3	3	4	3	3	2	2	1	2	2	2	3	4
u	15	2	2	1	2	2	5	4	2	2	2	2	1	1	3	1	2	4
e	16	4	4	5	5	3	2	3	3	3	3	3	3	3	3	4	4	5
s	17	4	3	4	2	4	2	4	2	2	2	4	4	2	2	2	2	4
t	18	3	4	2	1	5	4	1	1	3	1	4	5	2	5	4	4	5
i	19	1	3	4	1	4	3	5	4	3	3	3	5	3	1	4	3	5
o	20	3	1	1	1	5	1	2	1	2	1	1	1	1	3	1	1	5
n	21	4	2	1	2	4	1	3	1	2	2	1	2	2	1	2	2	1
s	22	4	4	5	5	5	4	5	5	4	5	5	5	5	5	5	4	1
	23	3	1	2	1	2	3	1	2	3	3	2	1	2	2	2	2	5
	24	4	4	2	5	2	4	2	5	4	4	5	5	4	4	4	4	5
	25	4	5	4	5	5	5	5	5	4	4	5	5	4	4	4	5	5
	26	1	3	4	5	3	5	1	4	4	4	5	5	4	5	4	4	5

Appendix H: Comments from the Second Questionnaire

7. If the new emphasis on flexibility for wing commanders allows determination of UTC requirements at wing level, this will:

___ Lead to unknown transportation requirements

___ Increase the execution planning requirements

___ Lead to elimination of standard UTCs

Comments: (First Questionnaire)

- since one of the main uses of the LOGDET is to identify gross movement requirements, giving units total freedom would probably boost the requirements through the roof.
- at this time the standard UTCs provide a baseline level, that is understood at all levels of command. Each unit may tailor the UTC to their specific requirements.
- although you have wings with same weapon systems, individual wing commanders will determine what goes in what order.
- although it will also cause an increase in budget requirements as CCs want to "reserve" mobility equipment and not use it for peacetime causing duplicate items on-hand.

Comments: (Second Questionnaire)

- the table of allowance is the document for equipment mobility requirement - only assets that are provided in theater may be "tailored out".
- concur! Do not agree with last comment!
- keep a standard UTC, you need some baseline to go by.

8. UTCs are required for:

___ Deliberate planning (theater contingency plans)

___ Standardization of Air Force capabilities

___ Provision of building blocks in developing an operational base (i.e., aviation UTC plus services, supply, transportation, hospital, others are required for an operational base)

___ Establishment of unit's deployment (equipment) requirements

Comments: (First Questionnaire)

NONE WERE PROVIDED BY THE PANEL MEMBERS.

Comments: (Second Questionnaire)

- standard aviation UTCs are not deployed to CONUS or the AOR because of money, airlift, billeting, and theater commander desires. We only use standard UTCs when we "PLAY" Phase 1 exercises.

9. The current UTC development process could be improved by:

___ Sending a questionnaire once a year validating the equipment requirement and requesting changes to the standard UTC.

___ Having the unit's deployable short tons be dictated by the MAJCOM functional manager and the unit determines the specific equipment required to meet the tasking.

___ Having the MAJCOM allow the unit a certain percentage of the total weight for flexibility.

Comments: (First Questionnaire)

- each unit should respond once a year on a given schedule with the total tonnage per UTC. Airlift can be figured on this schedule and matched with other units with like UTCs to insure some continuity.
- all this is a waste of time
- rotating is not the answer. We have a hard enough time getting pilot units to report on time.
- establish a maximum quantity of each piece of equipment/item, let units (wing/sqdn) determine actual (as low as "none required") quantities. Forward to MAJCOM for airlift planners.

Comments: (Second Questionnaire)

- dumb.
- I like the idea of MAJCOM dictating the maximum short tons, but dislike the extra workload it would create for my flight. It would be feasible only when applied to specific Oplans or destinations and concept of operations.
- pilots units are reporting this data via a LOGMOD tape to HQ ACC and mobility command uses this data to match airlift and justify their funding.
- do not concur with second comment!

10. UTC development/maintenance could be best enhanced by improving or initiating the following type of training:

___ Formal functional manager training course

___ Formal pilot unit/non-pilot unit training course

___ Comprehensive training booklet for functional managers, pilot unit and non-pilot unit

Comments: (First Questionnaire)

- functional manager training course given to key personnel in 661XX career field would be ideal, also include a combat plans person.
- we put out articles in our quarterly digest to help units as well as training handouts. It isn't enough--they need formal training.
- no training exists currently. As a minimum a handout should be published covering both functional manager and pilot/non-pilot unit responsibilities. Even a one week short course would help (AFIT or ATC funded!) We'll never get to attend otherwise!

Comments: (Second Questionnaire)

- good idea!
- same comment applies as last time [AFIT or ATC funded!]. No dollars. My budget for FY 93 is only 2.3K!! for an 8 person shop and a wing that still deploys to SWA while maintaining its normal training deployments (Red Flag, WSEP, etc.)

11. If called upon to deploy anywhere in the world, the standard Unit Type Code (UTC) development process works correctly to identify equipment requirements that meet the unit's mission.

Comments: (First Questionnaire)

- if that's true, why were wing commanders wanting to add all but the kitchen sink during Desert Shield?
- additional cargo is necessary for bare base operations, chemical warfare equipment played a big part in Desert Shield.
- the standard UTC does not take into account local unit needs or the locations the UTC might go nor LIMFACs such as limited airlift or ACL on airlift.
- Desert Storm caused number Z99 UTCs with little MAJCOM guidance to fill them with. Barely had a MISCAP for them!

Comments: (Second Questionnaire)

- agree with all the comments!
- standard UTCs are developed to meet a number of taskings. It would be a nightmare if every unit developed their own. Tailoring is the key to uniqueness.
- have seen no deployment go as planned. Every time the package gets tailored to fit the needs.
- a lot of wing taskings for Desert Storm were not familiar with the 184SK plan! Did not know what equipment/facilities were available!
- in my limited experience, most of the aviation equipment and support equipment remains the same.
- those who determine the UTC contents and actually utilize them (i.e., maintainers and operators for the aviation package) don't know or understand the UTC development process or the function of standard UTCs and MISCAPs. They don't take the time to carefully develop them and during execution, they simply take what they want. The AF needs to train managers (all levels) in mobility/planning like it does in speech presentation and AF writing! Maybe SOS would be more valuable/interesting. (Also, Senior NCO Academy)
- it seems that there is one plan for ORI needs (IG) and another for real world go to war needs.
- the key word here is CORRECTLY. If a UTC is developed as it should be, according to its MISCAP, and almost all state "Bare Base", equipment would be tailored out.

12. The standard Unit Type Code (UTC) development process works correctly to identify consumable items required to meet the unit's mission capability/designated operational capability statement.

Comments: (First Questionnaire)

- some pilot units don't realize they should add consumables into the standard UTC that may affect compliance with the MISCAP.
- fighter wings have a certain amount of different consumable items they require.
- needs more inputs from units. Too many consumables are listed that are no longer used or the quantities are too high. But non-pilot units don't take the UTC program seriously enough and don't provide good (any) inputs.

Comments: (Second Questionnaire)

- never did an analysis on numbers required versus actual used.
- learned lessons from Desert Storm; we didn't have enough CWRSK and bench stock.

13. Your UTC development responsibilities are important in the overall planning process.

Comments: (First Questionnaire)

- if we don't report the MAJCOM's UTCs to Air Staff, they don't get the information for the TUCHA.

Comments: (Second Questionnaire)

- right on target!

14. UTCs are currently developed in the best possible way.

Comments: (First Questionnaire)

- from functional managers down to the pilot units, we need formal training to teach people everything from why to how to build UTCs.
- a better training program and more participation from the fighter squadrons could enhance the system greatly.
- non-pilot units need more input at initial stage.
- non-pilot units don't take the program seriously enough and don't provide good (any) inputs.

Comments: (Second Questionnaire)

- the program seems to be about as good as can be expected.
- not only a better training program, but modify AFR 28-3 Chapter 25. To vague to develop a UTC.
- most pilot unit COMPES managers range from sergeant to technical sergeant and have no prior experience. The most knowledgeable 661X0 should by selected as pilot units.
- need formal training for other that 661X0's.
- agree with comments.
- don't know -- am not a loggie.
- yes to comments 1 and 2, last comment was a good point.
- more input from non-pilot units to pilot units. There is no listing for pilot units to know who is using their UTC's.

15. Once a standard UTC is approved, units should not be allowed to tailor up (add equipment to the package that was not originally authorized in the approved package).

Comments: (First Questionnaire)

- if an item is 'truly' needed it should be added on, but it must be approved by the MAJCOM functional manager.

- packages have to be tailored because of different packing containers and additional requirements at bare base locations.
- equipment differences and pilot units who don't bother to review TA changes often drive non-pilot units to this.
- the units need the flexibility to do both.
- they should be able to add equipment if coordinated with MAJCOM or CTF, etc.

Comments: (Second Questionnaire)

- on condition: need to get MAJCOM and task force/CENTAF/etc. approval.
- Desert Storm prime example. If full UTC was sent for each unit, we would have needed three times the airlift and most of that equipment would have just sat there not being used.
- airlift is the big factor!
- adding equipment is possible now, but no one wants to do the paperwork.

16. Your opinions and recommendations are considered in the development of the standard UTC package.

Comments: (First Questionnaire)

- I get calls from pilot units almost daily as well as functional managers.

Comments: (Second Questionnaire)

- as a 66XX, I have little input other than clarifying MISCAPs for commanders.
- the deploying units' opinions are used. My unit is merely the facilitator.

17. Standard UTCs combined at a deployed location make up a complete operational deployed base. (i.e., all equipment required for the base are included in the UTCs)

Comments: (First Questionnaire)

- only in a perfect world would this happen. If all UTCs were developed correctly, I might agree.
- many UTCs are lacking (i.e., 3FKL0 has flight surgeon and med techs but little medical equipment to support 400+ personnel).

Comments: (Second Questionnaire)

- at Provide Comfort in Turkey, both Incirlik and Batman were needing more UTCs after all persons and

equipment was in place. EX: CES package needed to build more tents and latrine facilities.
- if UTC development and maintenance is done correctly and everyone executed their responsibilities, this is a true statement. Again, education!

18. One office of primary responsibility in the Air Force at either a MAJCOM level or higher level should be responsible for the establishment of standard UTC equipment requirements.

Comments: (First Questionnaire)

- even with all the problems with pilot units, they are the people who know what's best when it comes to developing a UTC to be capable of performing a specified mission.
- functional managers have the expertise for their areas. They need to continue supporting/validating their UTCs.

Comments: (Second Questionnaire)

- the unit doing the deployment knows their needs better than MAJCOM.

19. A computer program that simulates wartime requirements should be developed that will establish standard UTC requirements.

Comments: (First Questionnaire)

- the units should have a say in it.
- I'm not convinced computer simulations/models give the real picture, but due to budgetary constraints they are better than nothing.

Comments: (Second Questionnaire)

- the missions being flown during Provide Comfort were varied - changing weekly as the commander made new decisions. About the only thing standardized was we'd provide overflight cover - how, with what and duration changed constantly.

20. Non-pilot units should have minimal inputs into UTC development.

Comments: (First Questionnaire)

- non-pilot units should actively participate in UTC development. They always will catch things pilot units miss.

- non-pilot units need to be more involved and they need to be in touch with the pilot unit.
- non-pilot units have to many restrictions and are affected by it. Inputs for development need to come from all MDS units.
- if anything, maximum inputs.
- crossfeed information from all like units will be instrumental in developing a program that can effectively be used by all.
- all units with the same MDS should have inputs to their UTCs.

Comments: (Second Questionnaire)

NONE WERE PROVIDE BY THE PANEL MEMBERS.

21. Standard UTCs don't work (i.e., don't relate to the way we train), so let each unit develop their equipment requirements.

Comments: (First Questionnaire)

- the units need to have input in the process.
- again, this could drive airlift requirements through the roof.
- we need some standardization for deliberate planning and transport.

Comments: (Second Questionnaire)

- the basic reason standard UTCs don't work is because units seldom if ever use them or really test them.
- the units need to learn to <u>make</u> the standard UTCs work.
- standard UTCs do have value, especially in simplifying the planning process.

22. Training on UTC development is insufficient.

Comments: (First Questionnaire)

- Amen!
- the planners need all the training they can get (includes: exercise, informal and formal training, and real world deployments).
- among 66XX/661X0s training is average. Other AFSCs need some form of introduction to it (especially 40XX career field).

Comments: (Second Questionnaire)

- this is obvious by the statistics shown.

- personnel in combat plans, which AFSC's don't mean too much [no special AFSC required to work in combat plans], need training.
- everyone involved in UTC development needs training.

23. The MAJCOM functional managers have the most knowledge to solve UTC equipment problems.

Comments: (First Questionnaire)

- functional managers from the fighter wings are more aware of equipment problems.
- most of them are clue-less!
- they can definitely resolve issues for the wing/sqdn when necessary.

Comments: (Second Questionnaire)

- the emphasis is on RESOLVE but most of the time they put us on the back burner - tying up the program for months.

24. There is not enough formal guidance dealing with UTC development making it difficult to develop a good standard UTC.

Comments: (First Questionnaire)

- there may be regulatory guidance, but no clearly written how-to-do-it manual for newcomers such as myself.
- this is why the automation group at the Worldwide Mobility Conference wanted to spell out, in detail, the procedures in AFR 28-3. Even the new draft regulation doesn't say enough. AFLMC is "studying" the problems. What a joke!
- no training exists currently. As a minimum a handbook should be published covering both functional manager and pilot/non-pilot units responsibilities. Even a one week short course would help.

Comments: (Second Questionnaire)

- I don't know -- don't have the "AFSC" background to know this.

25. There should be one comprehensive publication which covers all levels of UTC development and responsibilities (i.e., pilot, non-pilot, functional managers).

Comments: (First Questionnaire)

- fix AFR 28-3.

- As a minimum a handbook should be published covering both functional manager and pilot/non-pilot unit responsibilities.

Comments: (Second Questionnaire)

- a handbook as a guideline would be a big help.

26. Standard UTCs should be developed with a core package of equipment (universal requirements for all like units) plus a unit unique package.

Comments: (First Questionnaire)

- this is what happens now and it messes with airlift requirements/allocations.
- units should be able to add equipment if coordinated with MAJCOM or CTF, etc.

Comments: (Second Questionnaire)

- But!! The unit unique package must be coordinated with MAJCOM to ensure airlift.
- note, if any equipment added it must be coordinated with MAJCOM.

27. Are there any changes you can suggest that might improve the UTC development and execution process?

Comments: (First Questionnaire)

- mission capabilities, DOC statements and hard to read table of allowances (TAs) make it very difficult to match personnel/equipment into standard UTCs. For aviation UTCs there should be only one TA per weapon system, and that TA should be for mobility requirements.
- airflow requirements need work. One unit received DC-8 aircraft which caused a lot of additional work. Item managers need to work smarter on equipment shortages.
- pilot units do work with different MDS. Makes it difficult for users.
- let the Logistic Planners have more flexibility in their job, and the bottom line, don't let your OPs people do all the work. The <u>biggest</u> problem for any deployable UTC or deployment is not being involved from the beginning to end of planning of a deployment. Use your resources like they should be used, and if you don't, then get rid of the planner's AFSC (661X0).
- having face to face meetings between the MAJCOM functional manager, pilot units and affected non-pilot units. All must work closely together.
- cut the 4 month time lag at Air Staff to approve new UTCs.

- establish a UTC manager in each LGX.

Comments: (Second Questionnaire)

- I am already proposing a UTC for each squadron only! This UTC would be tailorable at execution within certain time constraints and weight allowances.
- I like the 4th comment! Who is this person --will they come work with me?! Too many loggies give up too soon! We need to push harder for the wing not to placate some local squadron commander.
- there should be one publication describing UTC development. With acronyms and definitions in mind. As it stands now, if someone has a question on UTCs, I would have to refer them to several publications to still be more confused then, to begin with UTC development at current is a matter of opinion.
- one thing would be to authorize a 661X0 in combat plans. Right now I have a 45274B and a 45471. This is no help in development of a UTC.
- I have worked in logistics for less than a year and have no formal training in the subject. Thus my opinions may not be expert enough for inclusion in a Delphi Method research project. Nevertheless, I have provided my opinions based on what I have observed during the past seven months.

Appendix I: Analysis of Questions from Questionnaires

Questions Based on Experience

Question 27 (Investigative Question [IQ]-2). All the equipment needed for your base was in the standard unit type codes (type units) that deployed. The response distribution and tendency measures (mean, median, mode) are provide in Figure 3 and Table 6. [NOTE: S D - Strongly Disagree, D - Disagree, N - Neither Agree nor Disagree, A - Agree, and S A - Strongly Agree]

Table 6

Question 27 -- Tendency Measures

Median - 2.00	Mean - 2.36	Mode - 2.00

Analysis. The majority of panel members indicated that they did not have all of the equipment needed for their base in the standard type units that were deployed. This is shown by the median indicating the panel members disagree with the question. The mean and mode also support disagreement. There could be a number of reasons for this. First, the standard type units were built incorrectly. Second, the standard type units were tasked to perform a mission that they were not built for. And third, the standard type units, when put together, do not make a complete operational base. All three of the reasons were

supported by the comments provided from the panel members. One of the comments was that the standard type units are built for exercise and not operational use.

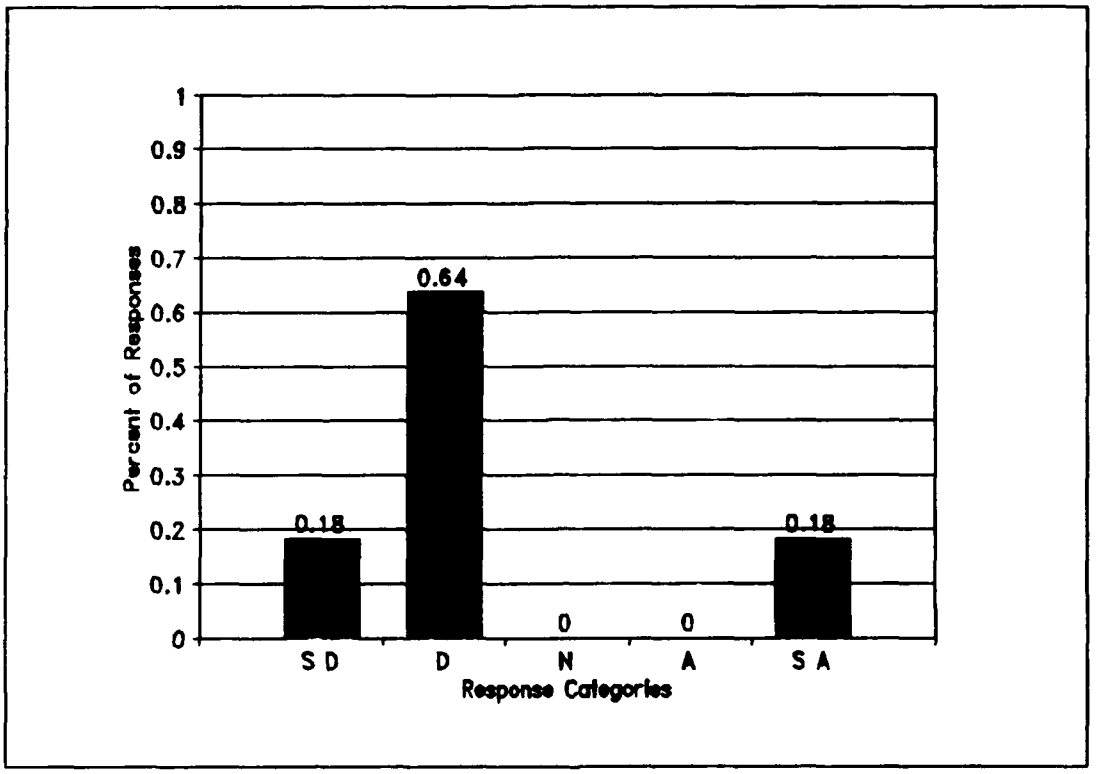

Figure 3. Question 27 Response Distribution

Question 28 [IQ-2]. The standard UTCs (type units) deployed to your location provided all the equipment required to perform the mission. The response distribution and tendency measures (mean, median, mode) are provided in Figure 4 and Table 7.

Analysis. The median and mode value for the question was number two or disagree. The majority of the panel members indicated the equipment in standard type unit was insufficient to meet mission requirements. Comparison

of the responses for this question with Question 27 suggest that the standard type units are not built properly to

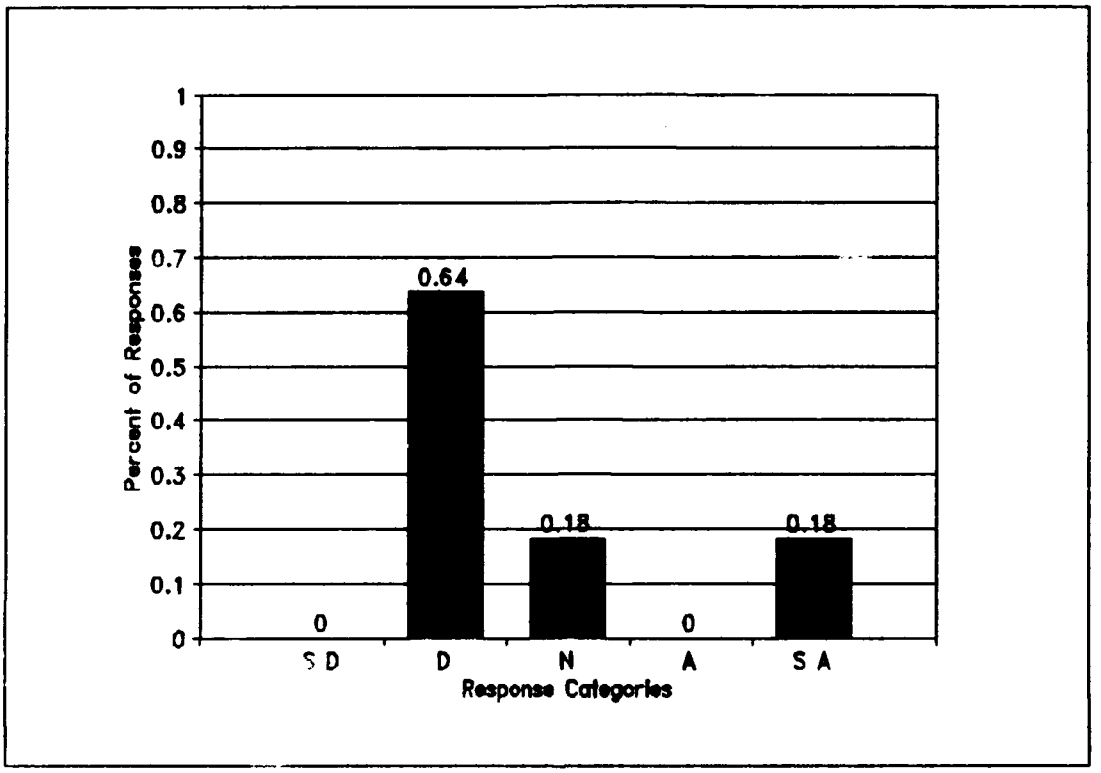

Figure 4. Question 28 Response Distribution

Table 7

Question 28 -- Tendency Measures

Median - 2.00	Mean - 2.72	Mode - 2.00

support the mission capability statement. One of the comments indicated that considerable equipment had to be shipped later because it was not originally loaded or tasked. The panel members also stated that most of the type

units were non-standard packages. A reason for this could be to fill the gaps that the standard type units did not.

Question 29a [IQ-2]. When all of the original UTCs tasked at your base arrived, the base required no augmentation (Consider only basic mission. Added missions should require additional UTCs and equipment.). The response distribution and tendency measures (mean, median, mode) are provided in Figure 5 and Table 8.

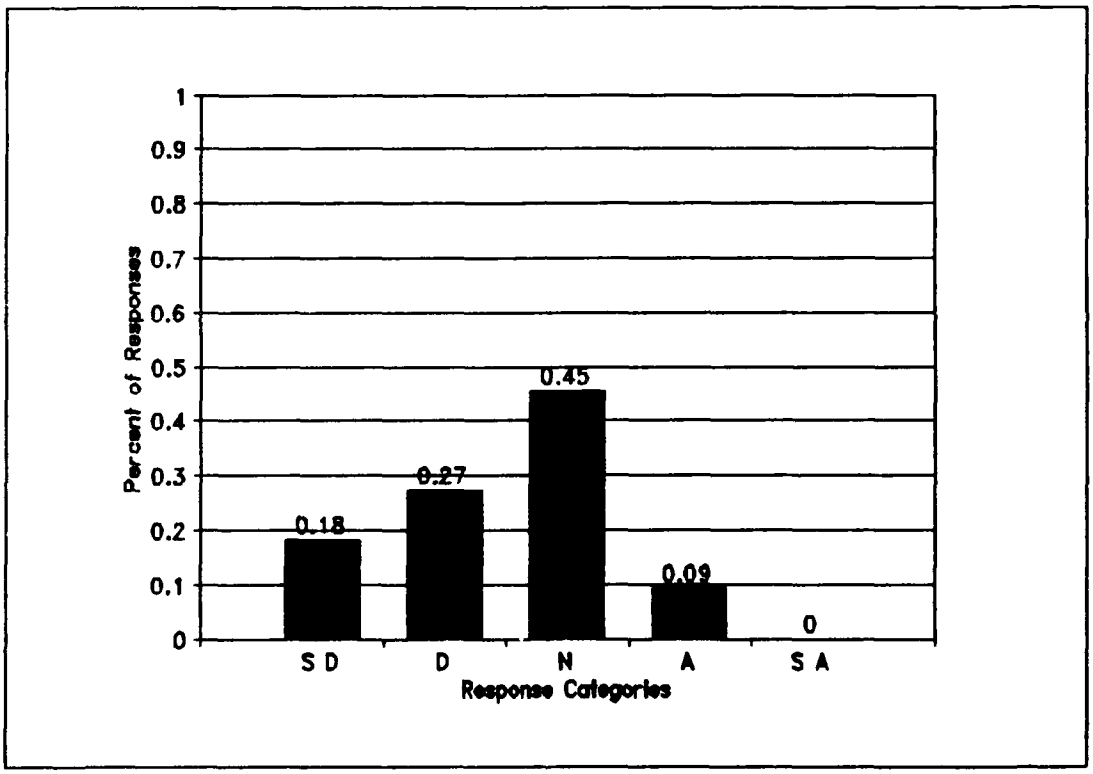

Figure 5. Question 29a Response Distribution

Analysis. The experiences of the panel members varied widely, but only one panel member indicated that his base required no augmentation. The median and mode indicate that the panel members had no knowledge in this area for an

agree or disagree response. This could be related to the fact that 40% of the panel members were not the deployed host units (Question 31). Forty-five percent of the panel members, of which 27% disagree and 18% strongly disagree, indicate that there was some problem with the standard type units in building an operational base.

Table 8

Question 29a -- Tendency Measures

Median - 3.00	Mean - 2.45	Mode - 3.00

Question 29b [IQ-2]. Theater component command functional managers must cross-coordinate to insure common support or service equipment that supports multiple UTCs is included in at least one of the planned standard UTCs. The response distribution and tendency measures (mean, median, mode) are provided in Figure 6 and Table 9.

Table 9

Question 29b -- Tendency Measures

Median - 4.00	Mean - 3.60	Mode - 4.00

Analysis. The median and mode of the question was number four or agree. Sixty percent (40% agree and 20%

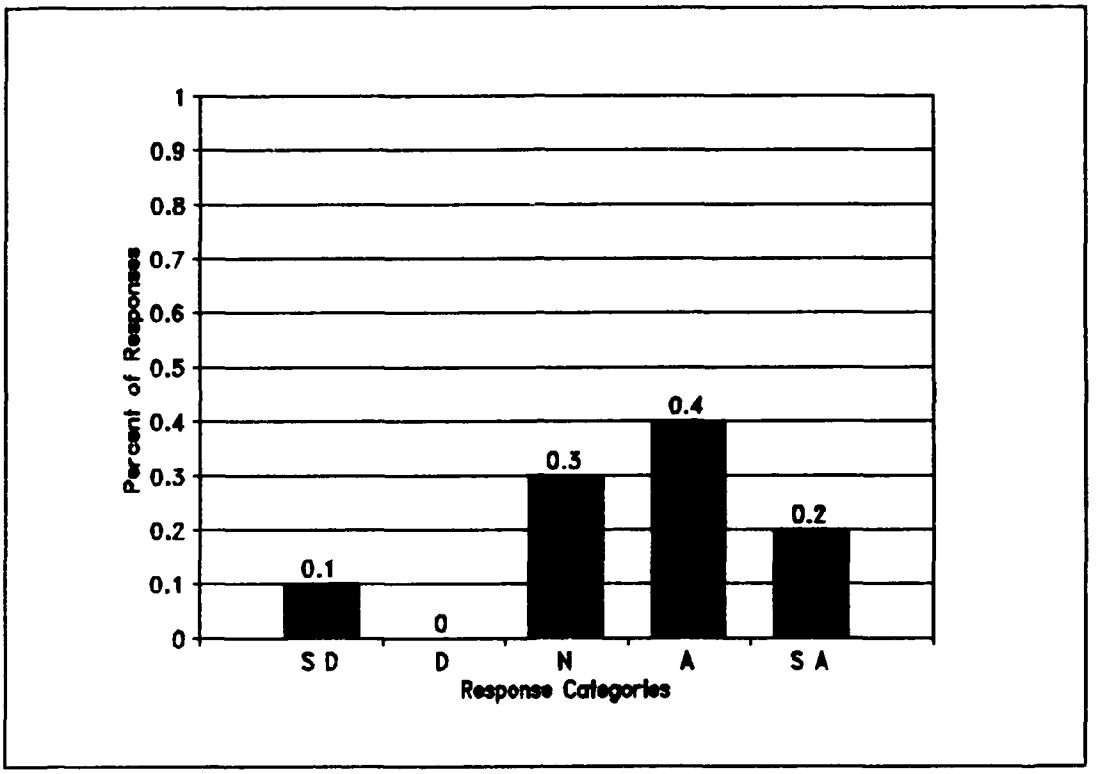

Figure 6. Question 29b Response Distribution

strongly agree) of the panel members supported the idea that the cross-coordination was required to ensure common support or service equipment was included in at least one of the planned standard type units. The theater component command managers are the personnel who build the base using the standard type units. One panel member strongly disagreed with this idea. The panel member made no comment indicating the reason for the strong disagreement.

Question 29c [IQ-2]. Theater component commands should be directed to develop standard UTCs that provide common equipment that supports all mission standard UTCs. The response distribution and tendency measures (mean, median, mode) are provided in Figure 7 and Table 10.

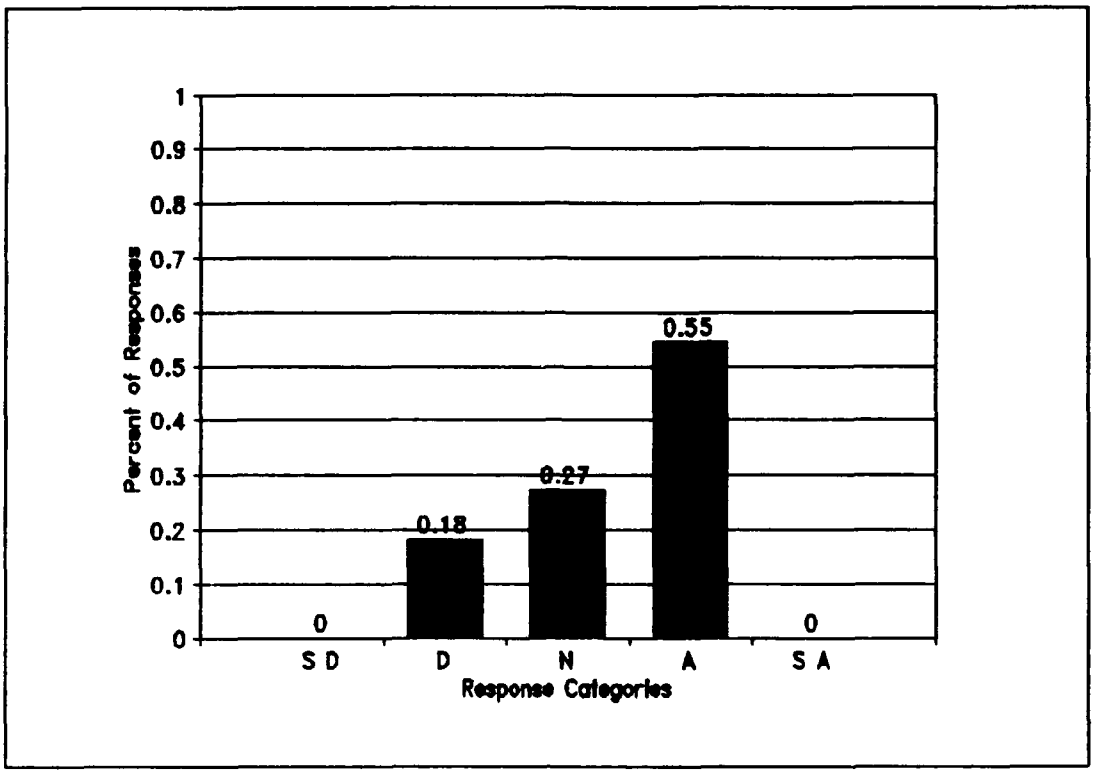

Figure 7. Question 29c Response Distribution

Analysis. The median for this question was four (agree). The mean was slightly higher than three, a result of 55% of the panel members agreeing with the question. This indicates that they want the theater command manager involved in making sure that the standard type units provide the common equipment required for the units deploying to a location.

Table 10

Question 29c -- Tendency Measures

Median - 4.00	Mean - 3.36	Mode - 4.00

Question 30 [IQ-2]. Your standard UTC was augmented (equipment added that should have been authorized into the standard UTC) by approximately _____ for Desert Shield/Storm. The response distribution and tendency measures (mean, median, mode) are provided in Figure 8 and Table 11.

Table 11

Question 30 -- Tendency Measures

Median - 2.00	Mean - 1.90	Mode - 1.00

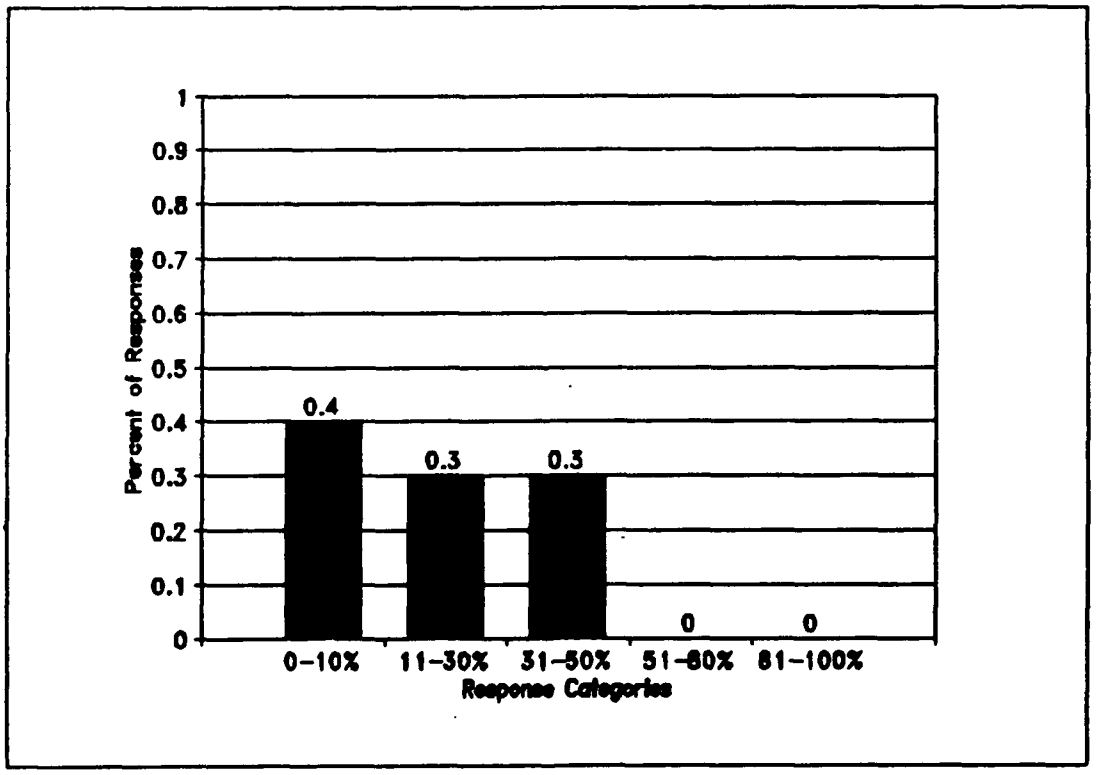

Figure 8. Question 30 Response Distribution

Analysis. The panel members were divided between the first three responses. The median and mean indicate that the average augmentation to the standard type unit was between 11% and 30%. With a major deployment some augmentation of the standard type unit is expected. However, 60% percent of the units required augmentation between 11% and 50%. This indicates that there was a lack of standardization between units or the standard type unit did not meet mission requirements.

Question 31 [IQ-2]. Was your unit the host unit?

Analysis. This question was important because if a unit was the host, they would support the other units deploying into the base. They also would have to set up all the support areas. Sixty percent of the panel members were part of a host unit.

Question 32a [IQ-1]. How many changes have you requested to the standard package (as non-pilot or as a pilot unit)? The response distribution and tendency measures (mean, median, mode) are provided in Figure 9 and Table 12.

Table 12

Question 32a -- Tendency Measures

Median - 2.00	Mean - 2.38	Mode - 2.00, 3.00

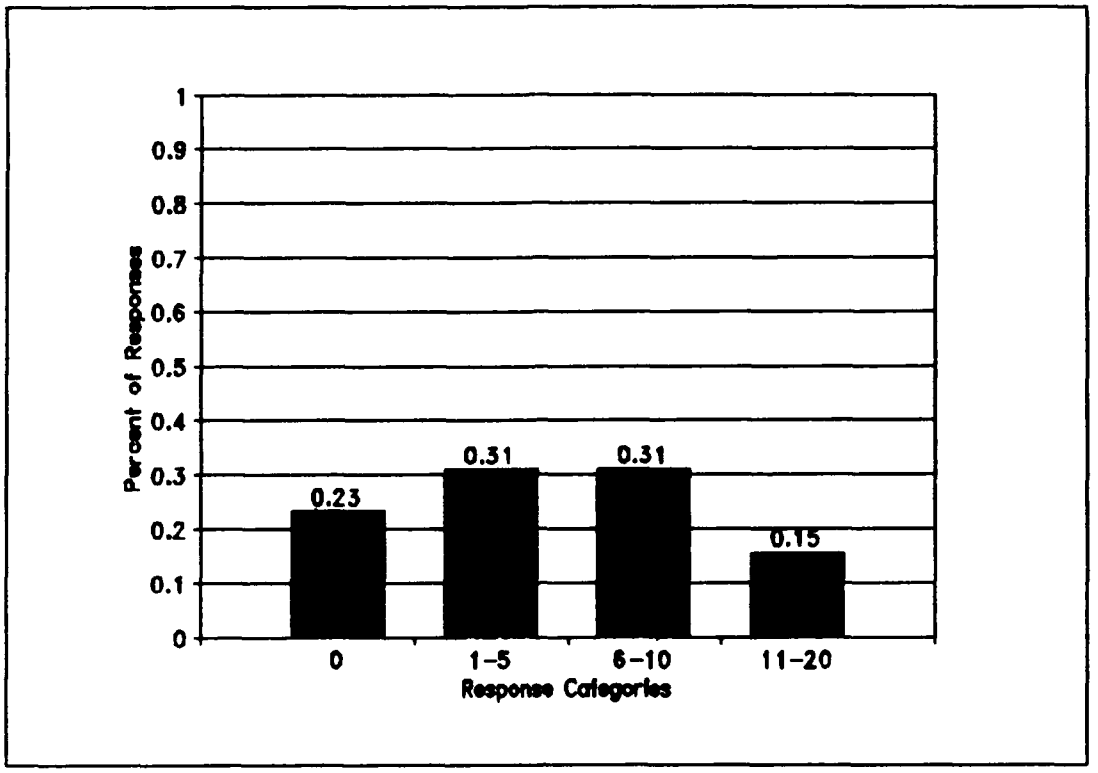

Figure 9. Question 32a Response Distribution

Analysis. The distribution range for this question was wide. The median was one to five changes with the mode being one to ten changes. Seventy-five percent of the panel members had requested between one and twenty changes.

Question 32b [IQ-1]. How many changes have you coordinated to the standard package as a pilot unit representative? The response distribution and tendency measures (mean, median, mode) are provided in Figure 10 and Table 13.

Analysis. In theory, according to regulations, all pilot and non-pilot units should coordinate on proposed changes to standard type units. The distributions should

match for questions 32a and 32b. Even though the median was also two, the mode and mean were lower than question 32a.

Table 13

Question 32b -- Tendency Measures

Median - 2.00	Mean - 2.00	Mode - 1.00

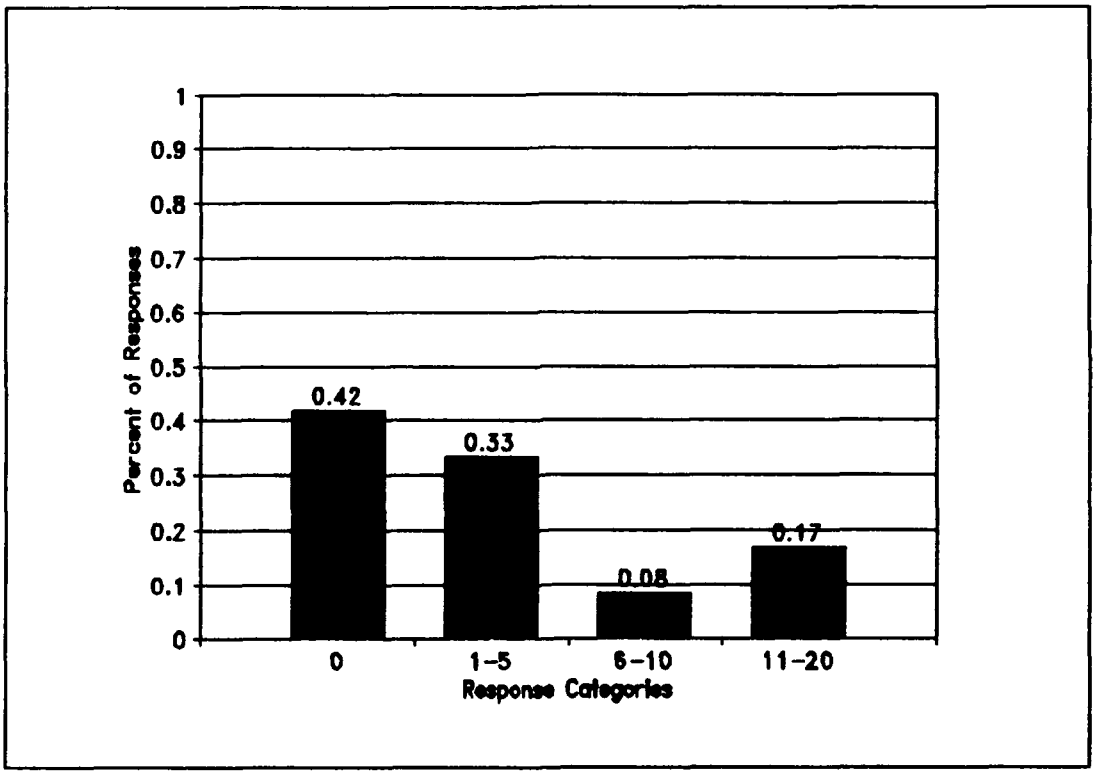

Figure 10. Question 32b Response Distribution

Fifty-eight percent of the panel members had coordinated on changes to type units, compared with 77% in question 32a that had recommend changes to type units. After a change has been recommended, either the pilot unit or non-pilot

units are not following the procedures in the regulations and coordinating on the change.

Question 33 [IQ-1]. On average, how long did these changes take to get approved or disapproved? The response distribution and tendency measures (mean, median, mode) are provided in Figure 11 and Table 14.

Table 14

Question 33 -- Tendency Measures

Median - 1.50	Mean - 1.75	Mode - 1.00

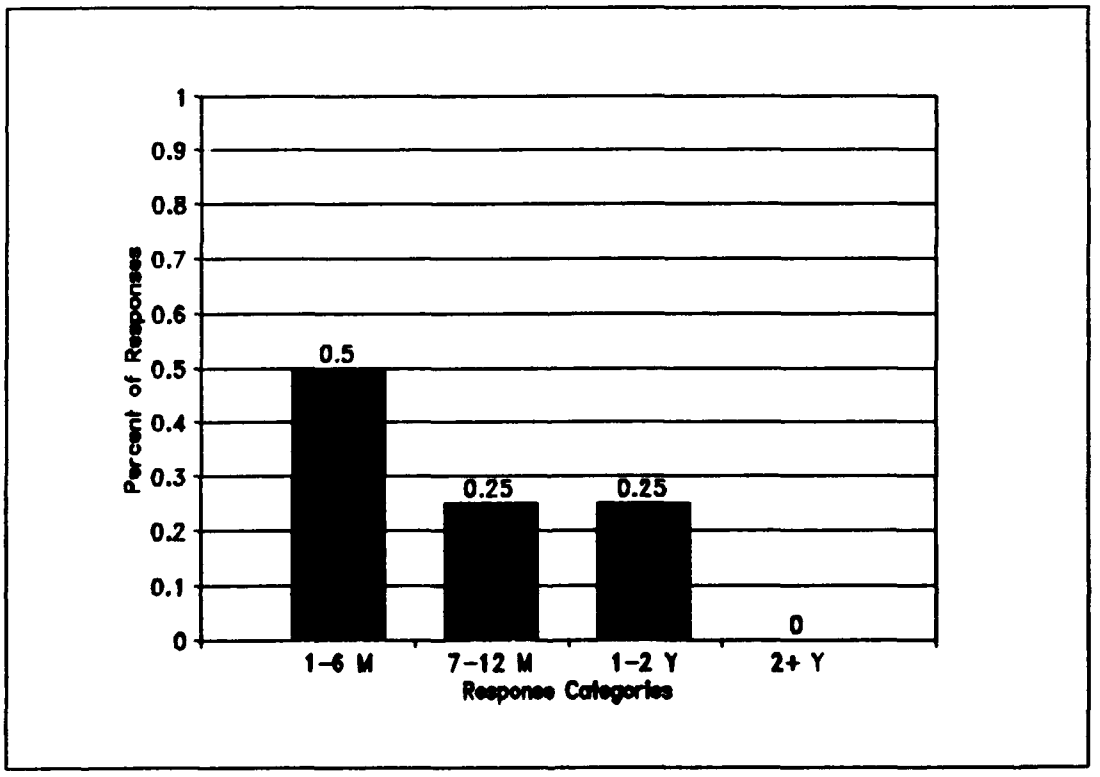

Figure 11. Question 33 Response Distribution

Analysis. The median was between one to twelve months with a mode of one to six months. The panel members indicated that 75% of the changes were approved within the first 12 months. However, 25% of the changes took between one and two years. This time lag could cause some units to not recommend changes to the package. Considering the occasional lack of coordination indicated in question 32b, the question of how long the process would take if all units participated in coordination as required by regulation arises.

Questions Based on Opinion

Question 7 [IQ-3]. If the new emphasis on flexibility for wing commanders allows determination of UTC requirements at wing level, this will:

___ [1] Lead to unknown transportation requirements

___ [2] Increase the execution planning requirements

___ [3] Lead to elimination of standard UTCs

The response distribution and tendency measures (mean, median, mode) are provided in Figure 12 and Table 15.

Analysis. No consensus was reached, but 7-1 was chosen by 47% of the panel members as their first choice. A review of the rankings given by different subgroups in the panel revealed that statement 7-2 was ranked first by over 50% of the members whose area of responsibility included aviation pilot units and those who had both pilot and non-

pilot unit responsibilities. This might be expected due to the possible increase of changes at execution.

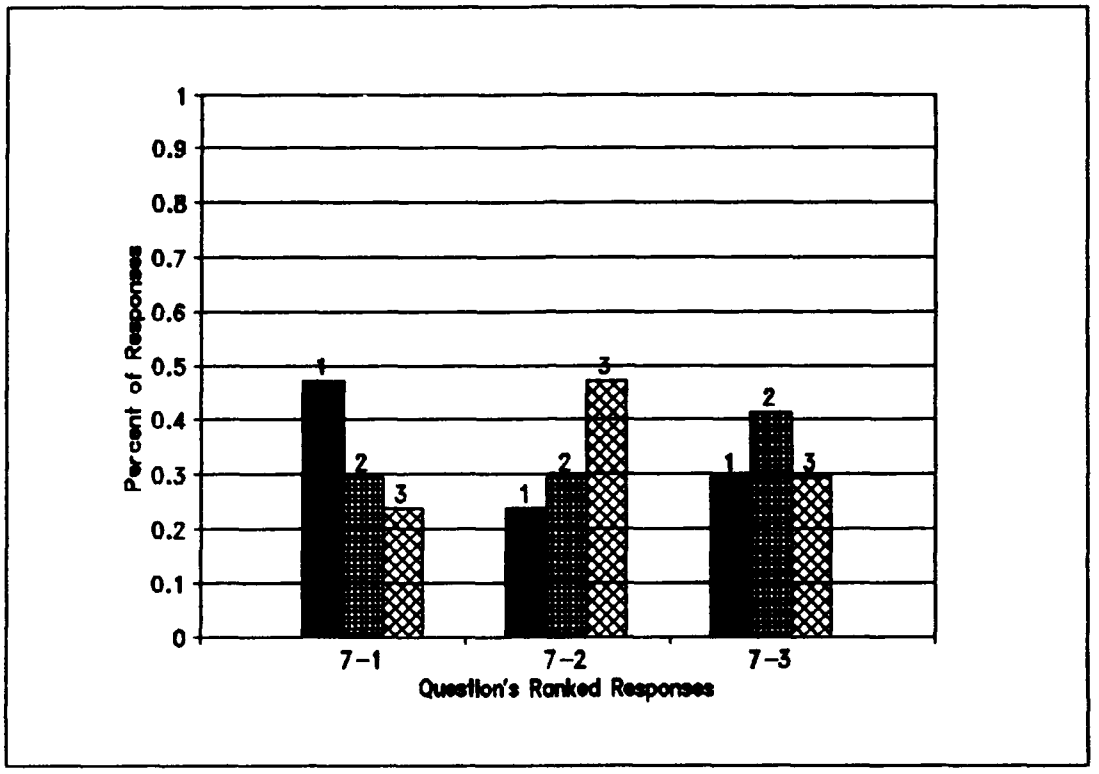

Figure 12. Question 7 Response Distribution

Table 15

Question 7 -- Tendency Measures

7-1	Median - 2.00	Mean - 1.82	Mode - 1.00
7-2	Median - 2.00	Mean - 2.12	Mode - 3.00
7-3	Median - 2.00	Mean - 2.06	Mode - 2.00

Fifty percent of the individuals who stated type unit management was a secondary responsibility ranked statement 7-1 as first, statement 7-2 as second, and 7-3 as third. Fifty-five percent of the individuals who stated type unit

management was a primary responsibility ranked statement 7-3 as second.

Question 8 [IQ-1]. UTCs are required for:

___ [1] Deliberate planning (theater contingency plans)

___ [2] Standardization of Air Force capabilities

___ [3] Provision of building blocks in developing an operational base (i.e., aviation UTC plus services, supply, transportation, hospital, and others are required for an operational base)

___ [4] Establishment of unit's deployment (equipment) requirements

The response distribution and tendency measures (mean, median, mode) are provided in Figure 13 and Table 16.

Analysis. Statements 8-2, 8-3, and 8-4 were all ranked as either first or second by more than fifty percent of the panel members. Statement 8-3 and 8-4 were ranked in the top three by 87% and 77% respectively. Statement 8-2 was ranked first or second by the highest percentage (59%) of the panel members, statements 8-3 and 8-4 were ranked first or second by 58% and 53% respectively. Statement 8-2 was selected by 100% of the functional managers as being ranked fourth, but they also selected statement 8-4 as either first or second. Fifty percent of the aviation pilot units selected statement 8-3 as being ranked third. The panel members agreed that standard type units are required

for standardization, building blocks, and deployment requirements.

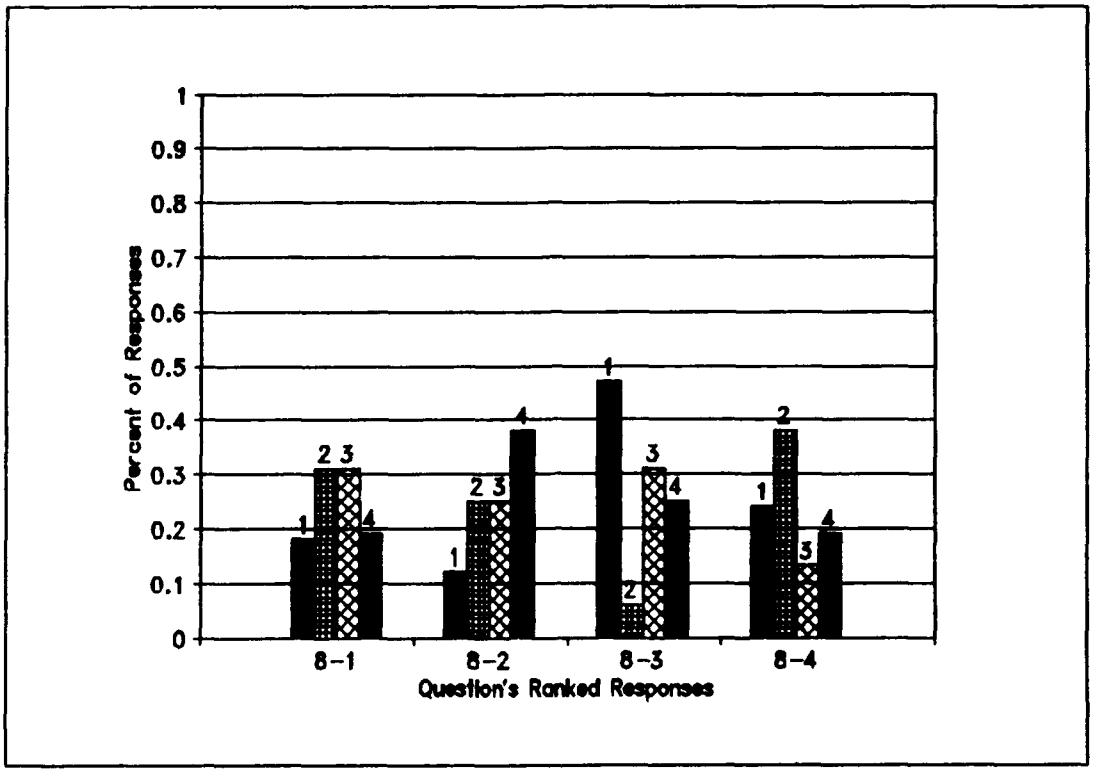

Figure 13. Question 8 Response Distribution

Table 16

Question 8 -- Tendency Measures

8-1	Median - 3.00	Mean - 2.76	Mode - 3.00
8-2	Median - 2.00	Mean - 2.47	Mode - 4.00
8-3	Median - 2.00	Mean - 2.24	Mode - 1.00, 2.00, 3.00
8-4	Median - 2.00	Mean - 2.53	Mode - 2.00

Question 9 [IQ-3]. The current UTC development process could be improved by:

___ [1] Sending a questionnaire once a year validating

the equipment requirement and requesting changes to the standard UTC.

___ [2] Having the unit's deployable short tons be dictated by the MAJCOM functional manager and the unit determines the specific equipment required to meet the tasking.

___ [3] Having the MAJCOM allow the unit a certain percentage of the total weight for flexibility.

The response distribution and tendency measures (mean, median, mode) are provided in Figure 14 and Table 17.

Table 17

Question 9 -- Tendency Measures

9-1	Median - 1.00	Mean - 1.40	Mode - 1.00
9-2	Median - 3.00	Mean - 2.73	Mode - 3.00
9-3	Median - 2.00	Mean - 1.87	Mode - 1.00

Analysis. The majority of panel members think the best way to improve the current type unit development process is to annually distribute a questionnaire to validate equipment requirements and request changes to the standard type unit. Number 9-2 was the middle of the three selections. The units liked the idea of having a set percentage of equipment allowed for flexibility. The least desirable option selected by a majority of the panel members was to have the major command functional manager dictate

deployable short tons and letting the unit determine the specific equipment to meet the mission.

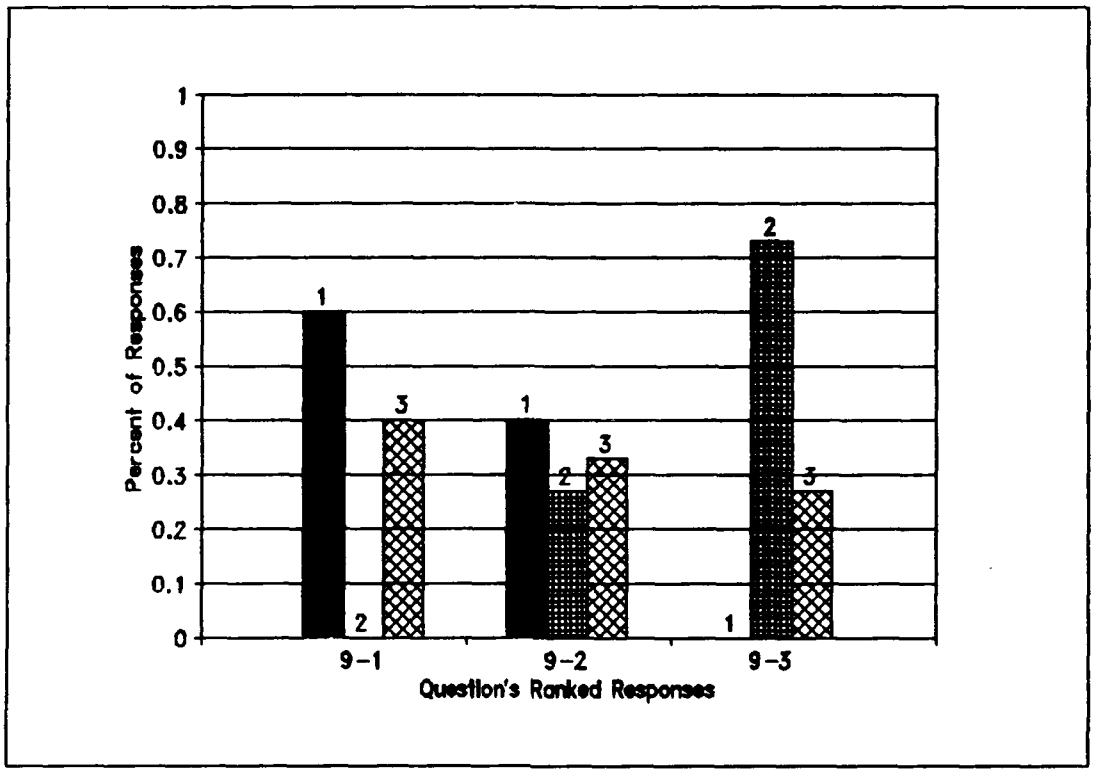

Figure 14. Question 9 Response Distribution

Question 10 [IQ-3]. UTC development/maintenance could be best enhanced by improving or initiating the following type of training:

___ [1] Formal functional manager training course

___ [2] Formal pilot unit/non-pilot unit training course

___ [3] Comprehensive training booklet for functional managers, pilot unit and non-pilot unit

The response distribution and tendency measures (mean, median, mode) are provided in Figure 15 and Table 18.

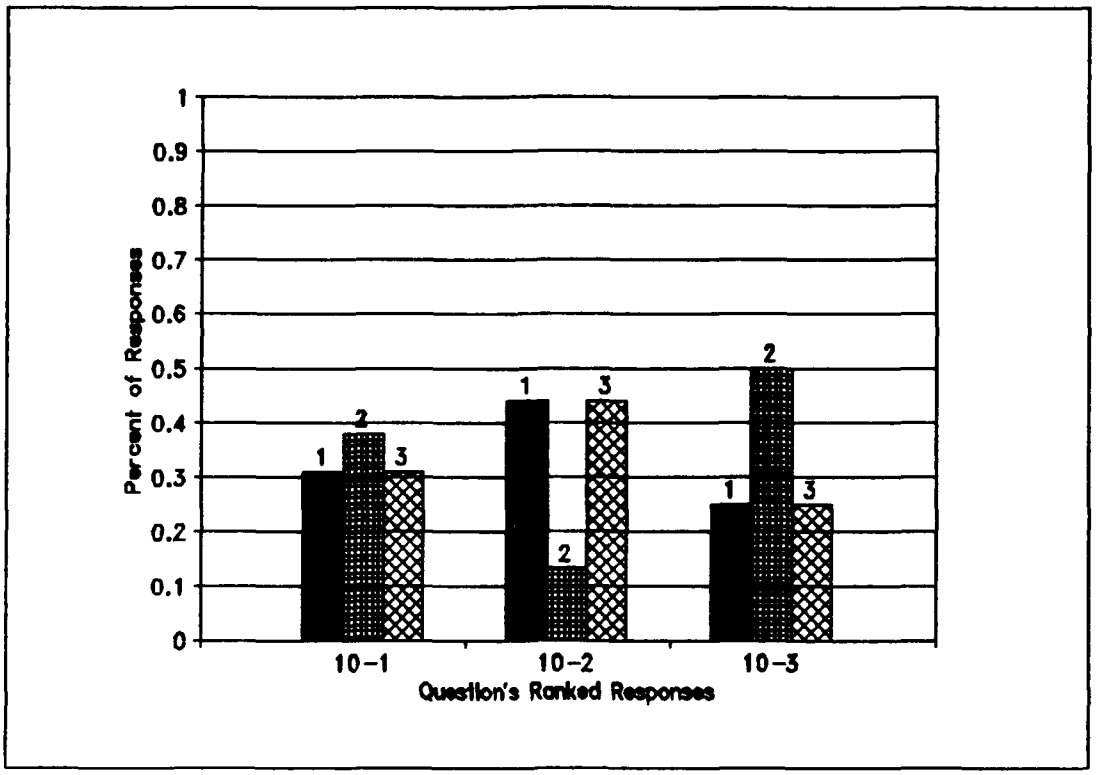

Figure 15. Question 10 Response Distribution

Table 18

Question 10 -- Tendency Measures

10-1	Median - 2.00	Mean - 1.87	Mode - 2.00
10-2	Median - 2.00	Mean - 2.12	Mode - 3.00
10-3	Median - 2.00	Mean - 2.00	Mode - 2.00

Analysis. No consensus was reached. A review of the selections made by subgroups revealed several patterns. A majority of aviation pilot unit members selected statement 10-2 as being ranked third and statement 10-1 as second. All of the functional managers selected statement 10-1 as first. The members whose area of responsibility was

identified as other (comprising primarily of members with both aviation pilot and non-pilot responsibilities) selected statement 10-1 as third. Formal functional manager training and a comprehensive training were elected by 76% of the panel members as the first or second choice. One comprehensive training booklet was selected by 70% as the first or second choice. Formal pilot and non-pilot unit training was selected as the first or second choice by 53%.

Question 11 [IQ-1]. If called upon to deploy anywhere in the world, the standard Unit Type Code (UTC) development process works correctly to identify equipment requirements that meet the unit's mission. The response distribution and tendency measures (mean, median, mode) are provided in Figure 16 and Table 19.

Table 19

Question 11 -- Tendency Measures

Median - 3.00	Mean - 2.88	Mode - 2.00, 4.00

Analysis. No consensus was reached; therefore, a review of the subgroups was made. Fifty-seven percent of the panel members who stated type unit management was a primary responsibility agreed with the statement. A pattern of selection for other subgroups could not be discerned. Panel members were split with 47% either disagree or strongly disagreeing and 41% agreeing. For the panel

members that agreed with the question, they commented that it is not the process at fault but the personnel developing the standard type units. For the panel members that disagreed with the question, local needs were the biggest concern.

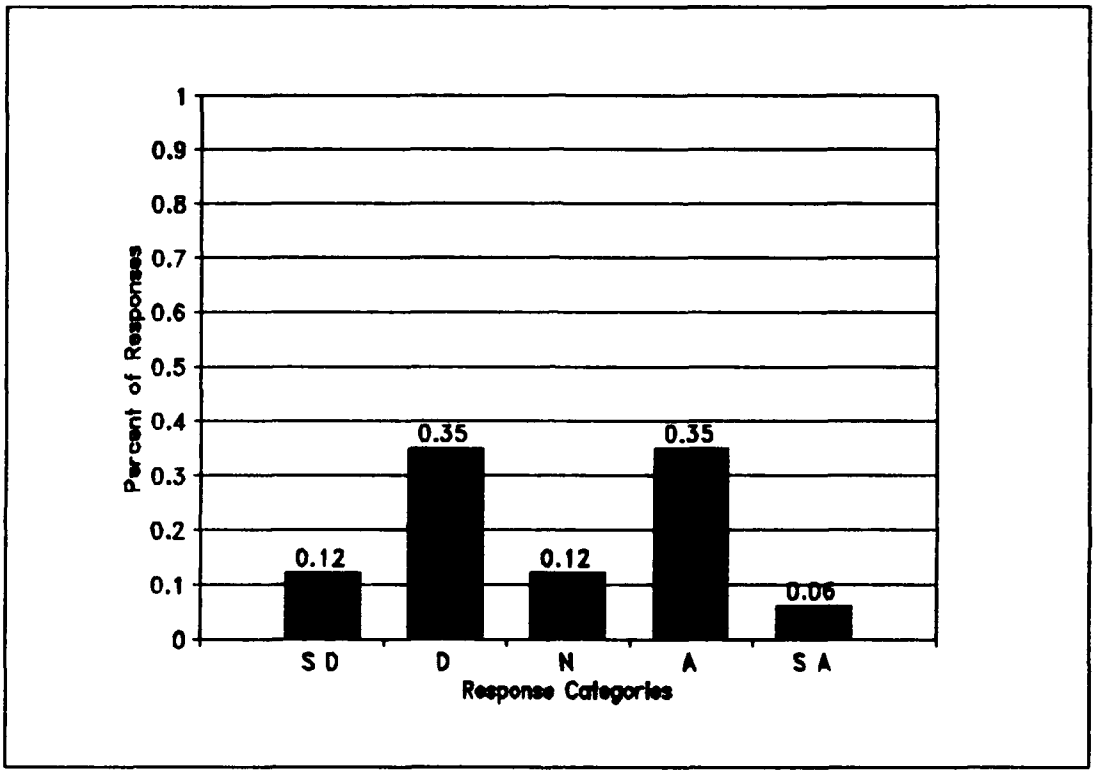

Figure 16. Question 11 Response Distribution

Question 12 [IQ-11]. The standard Unit Type Code (UTC) development process works correctly to identify consumable items required to meet the unit's mission capability/designated operational capability statement. The response distribution and tendency measures (mean, median, mode) are provided in Figure 17 and Table 20.

Table 20

Question 12 -- Tendency Measures

Median - 3.00	Mean - 3.25	Mode - 3.00

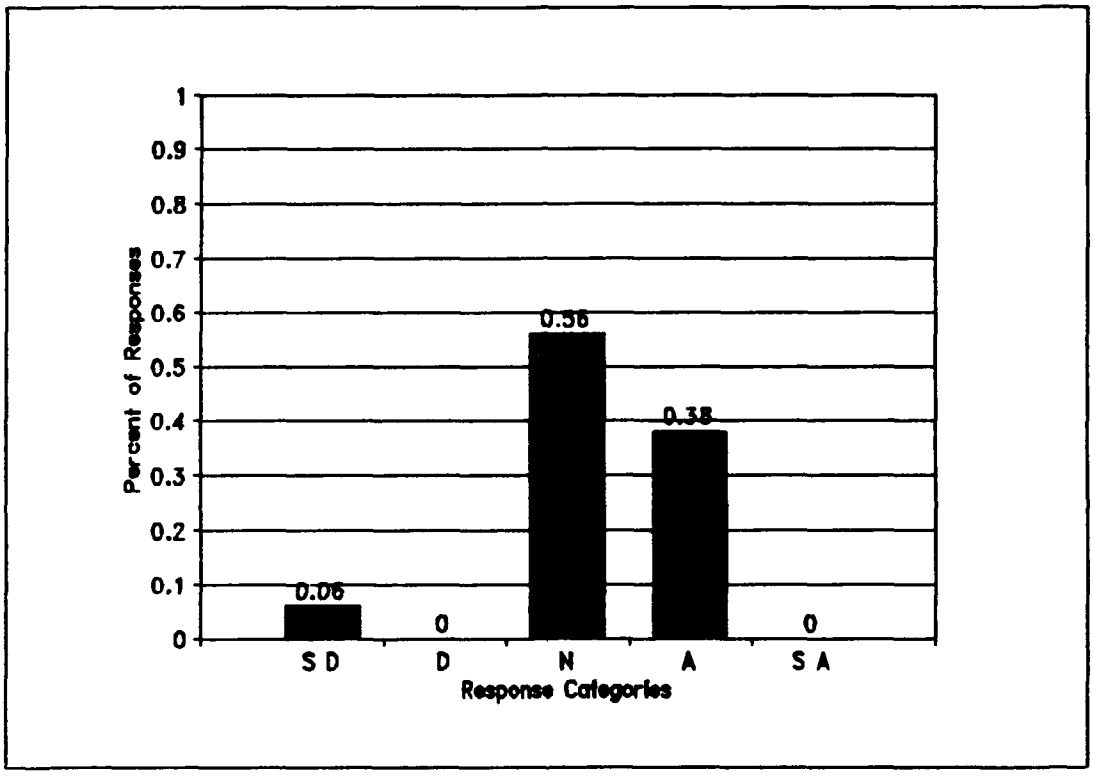

Figure 17. Question 12 Response Distribution

Analysis. A consensus of neither agree or disagree was achieved for the first questionnaire and second questionnaire. For the second questionnaire, different subgroups revealed different patterns of selection. Fifty percent of the people with type unit management as a primary duty agreed with the statement. Seventy percent of the people with type unit management as a secondary duty were

neutral about the statement. Those responsible for aviation pilot units (57%) agreed with the statement. Sixty-six percent of those who selected "other" as the area of type unit responsibilities were neutral about the statement. Most of the comments from the panel members noted that consumables are either too high, too low, or overlooked entirely.

Question 13 [IQ-1]. Your UTC development responsibilities are important in the overall planning process. The response distribution and tendency measures (mean, median, mode) are provided in Figure 18 and Table 21.

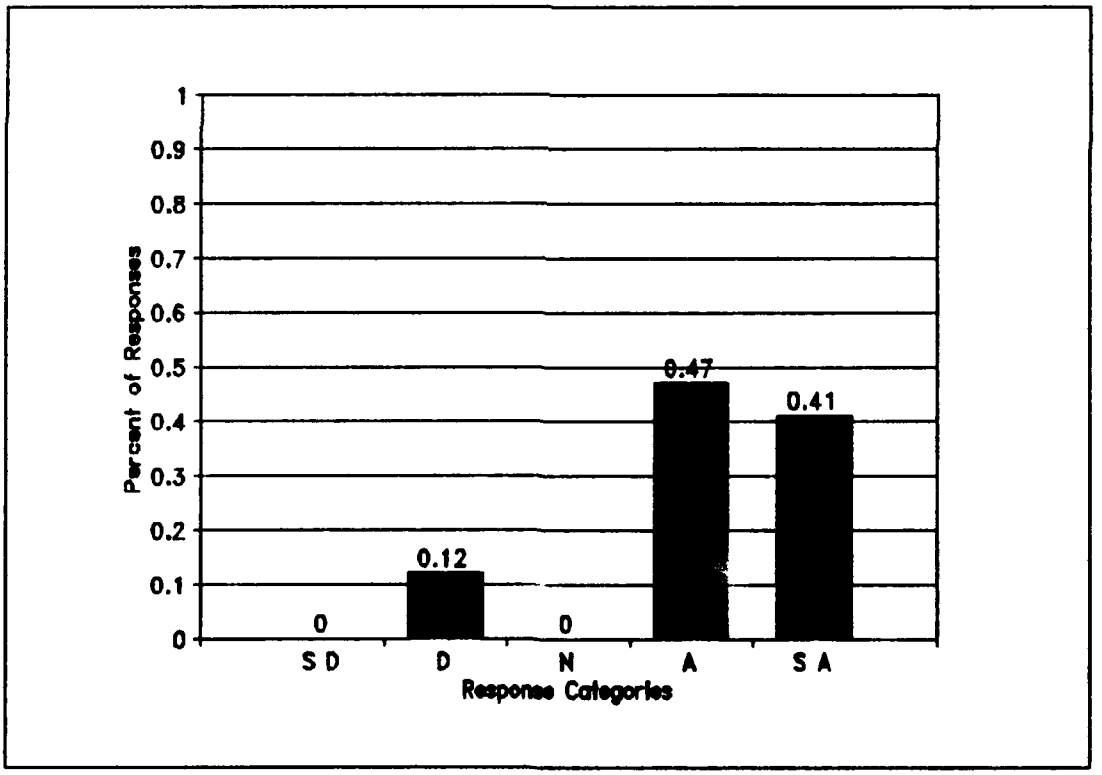

Figure 18. Question 13 Response Distribution

Table 21

Question 13 -- Tendency Measures

Median - 4.00	Mean - 4.18	Mode - 4.00

Analysis. There is a consensus among the panel members that their type unit development participation is important to planning. The consensus is divided amongst panel members who strongly agree (41%) and those who agree (47%) with this statement. This response distribution indicates that the panel members believe that their standard type unit development responsibility is important.

Question 14 [IQ-3]. UTCs are currently developed in the best possible way. The response distribution and tendency measures (mean, median, mode) are provided in Figure 19 and Table 22.

Analysis. No consensus was reached. Fifty percent of the panel members had selected statement three (neither agree nor disagree) in response to the first questionnaire. The median shows agreement with number three. The mean and modes indicate differently. The mean is just below three which indicates a little disagreement; the mode is bi-modal with modes of neither agree or disagree and agree. In reviewing responses to the second questionnaire, 50% of panel members whose type unit management was a primary responsibility were neutral.

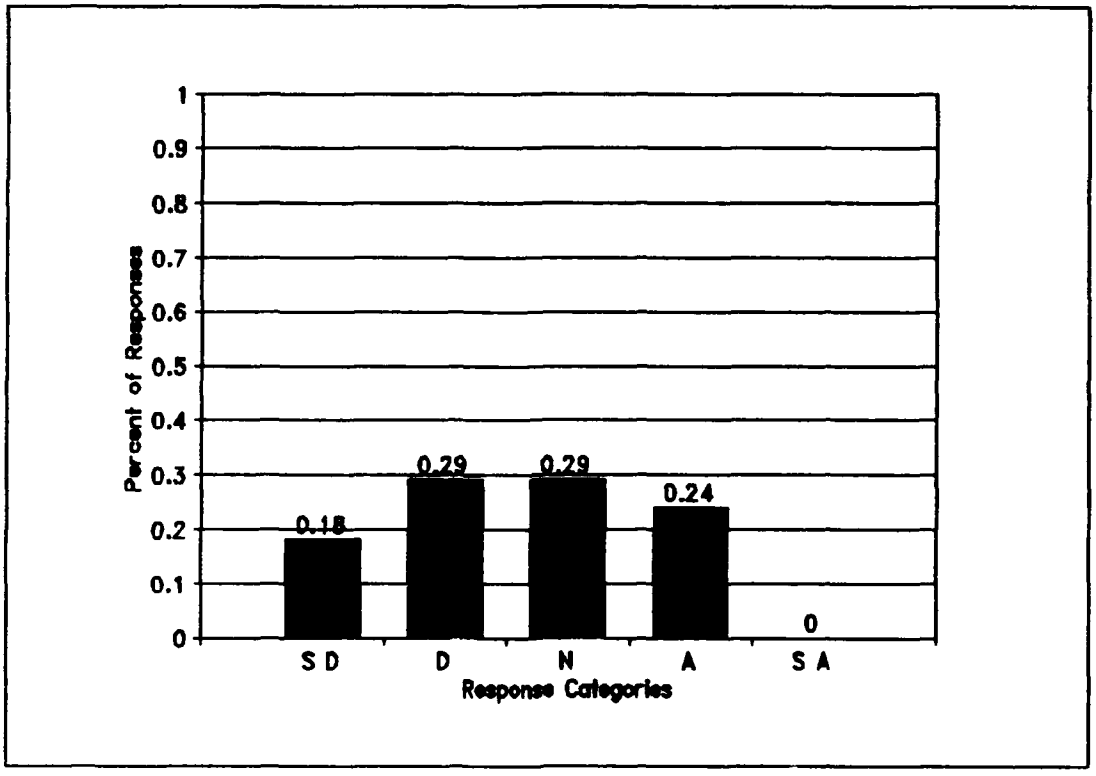

Figure 19. Question 14 Response Distribution

Fifty-seven percent of panel members with type unit management as a secondary responsibility agreed with the statement. All of the functional managers agreed with the statement. One interesting note is that only 24% agreed that the current development process is the best. Seventy-six percent of the panel members were neutral or disagreed with the question.

Table 22

Question 14 -- Tendency Measures

Median - 3.00	Mean - 2.59	Mode - 2.00, 3.00

Question 15 [IQ-3]. Once a standard UTC is approved, units should not be allowed to tailor up (add equipment to the package that was not originally authorized in the approved package). The response distribution and tendency measures (mean, median, mode) are provided in Figure 20 and Table 23.

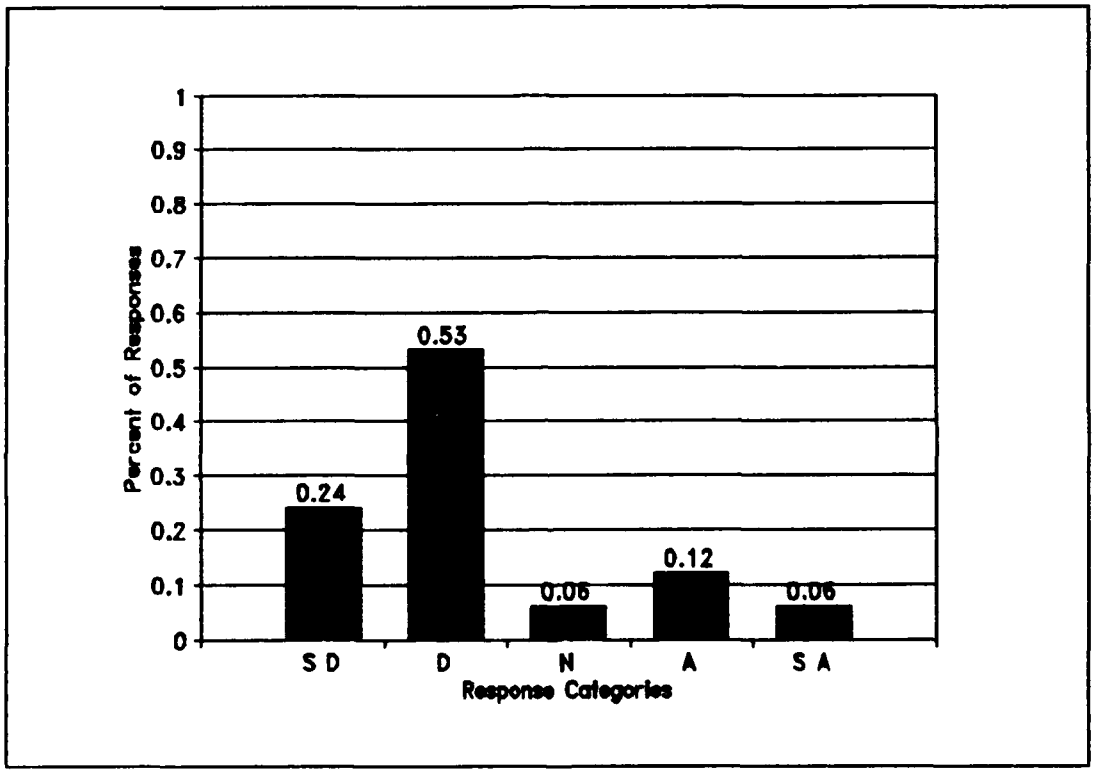

Figure 20. Question 15 Response Distribution

Table 23

Question 15 -- Tendency Measures

Median - 2.00	Mean - 2.24	Mode - 2.00

Analysis. There is a consensus that adding equipment to an approved standard type unit should be allowed. The comments received regarding the need to be able to add to the standard cite several different viewpoints. First, the equipment is required in the first place, it should be in the standard type unit. Second, pilot units that don't update the standard type unit when the tables of allowance change force units to tailor up. The overriding emphasis was on the flexibility of the units with command approval and airlift as extenuating circumstances. The strong disagreement indicates that the units do not trust the standard package to provide all the equipment units require. The consensus was composed of those who strongly disagree and those who disagree with the statement.

Question 16 [IQ-1]. Your opinions and recommendations are considered in the development of the standard UTC package. The response distribution and tendency measures (mean, median, mode) are provided in Figure 21 and Table 24.

Table 24

Question 16 -- Tendency Measures

Median - 3.00	Mean - 3.53	Mode - 3.00

Analysis. Consensus was reached by the panel members to neither agree nor disagree. However, the first

Delphi questionnaire achieved a consensus of 50% for agree and strongly agree. For the second Delphi Questionnaire, this slipped to 42%. The median and mode indicate neither agree or disagree with the mean leaning toward agree.

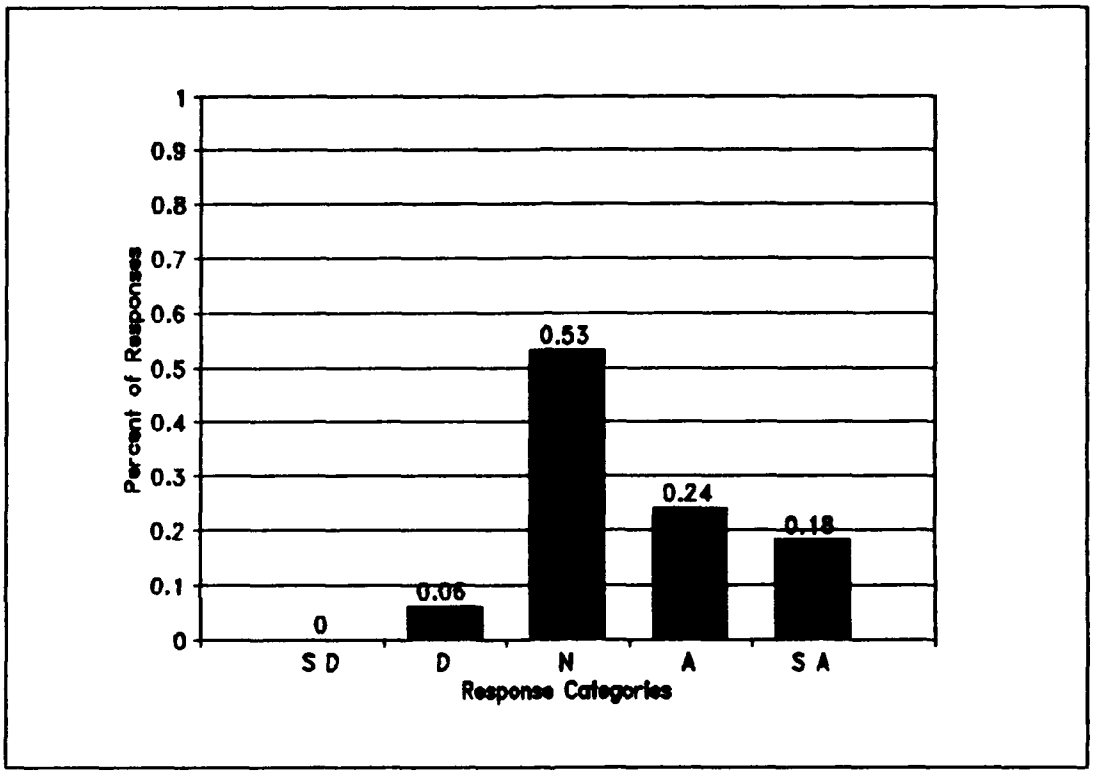

Figure 21. Question 16 Response Distribution

Approximately 71% of the panel members with type unit management as a secondary responsibility were neutral about this statement. Sixty-six percent of the panel members with type unit management as a primary responsibility either agreed or strongly agreed with the statement. Fifty-seven percent of the aviation pilot unit panel members were neutral about the statement. One comment from a squadron

level position was that they have very little input other than clarification.

Question 17 [IQ-1]. Standard UTCs combined at a deployed location make up a complete operational deployed base (i.e., all equipment required for the base are included in the UTCs). The response distribution and tendency measures (mean, median, mode) are provide in Figure 22 and Table 25.

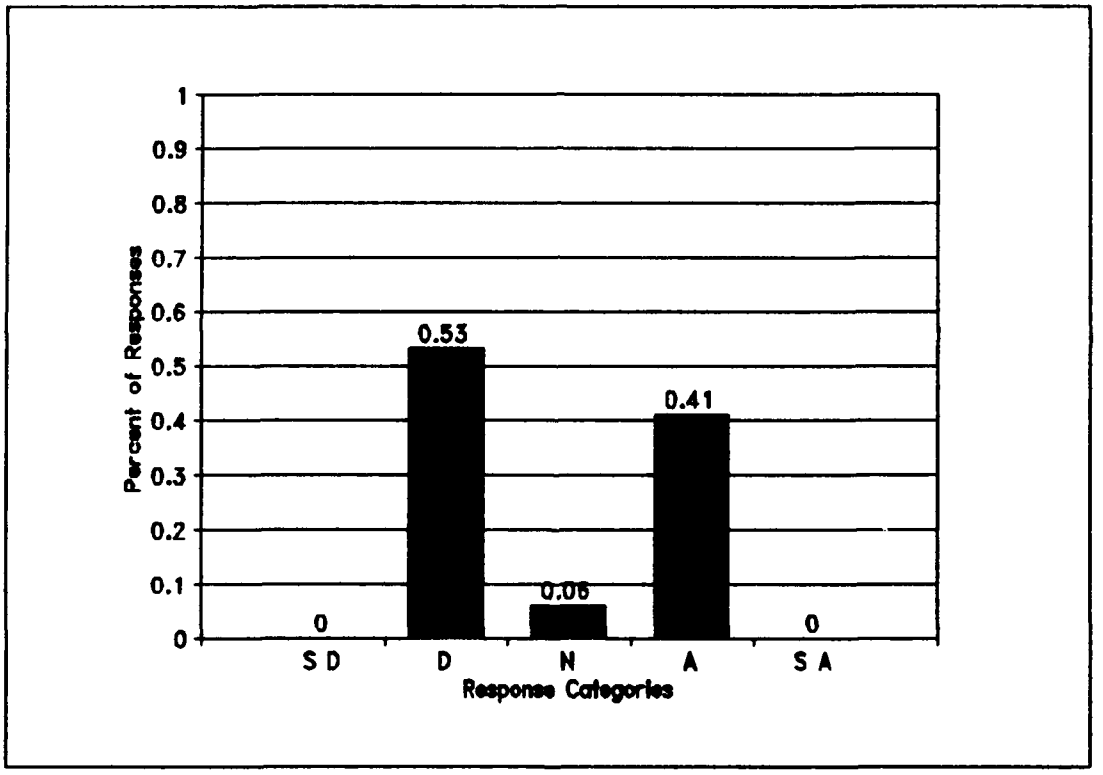

Figure 22. Question 17 Response Distribution

Analysis. The consensus reached is a disagreement that all equipment required for the base are included in the standard type units. The equipment shortfall may be due to either a lack in particular standard type units, a problem

in the selection of standard type units to create a base, or gaps that the standard type units do not account for. The panel members gave examples of medical and civil engineering type units that do not have enough personnel or equipment to support a complete operational base. One comment stated that a complete operational base would occur only in a perfect world and when all standard type units are built correctly.

Table 25

Question 17 -- Tendency Measures

Median - 2.00	Mean - 2.88	Mode - 2.00

Question 18 [IQ-3]. One office of primary responsibility in the Air Force at either a MAJCOM level or higher level should be responsible for the establishment of standard UTC equipment requirements. The response distribution and tendency measures (mean, median, mode) are provided in Figure 23 and Table 26.

Analysis. The consensus of the panel members was they either strongly agree (29%) or agree (24%) that one office of primary responsibility should be responsible for establishing standard type unit equipment requirements. This was indicated by 53% of the panel members. The median and mode of the question was agree. Thirty-six percent of

Table 26

Question 18 -- Tendency Measures

Median - 4.00	Mean - 3.18	Mode - 4.00

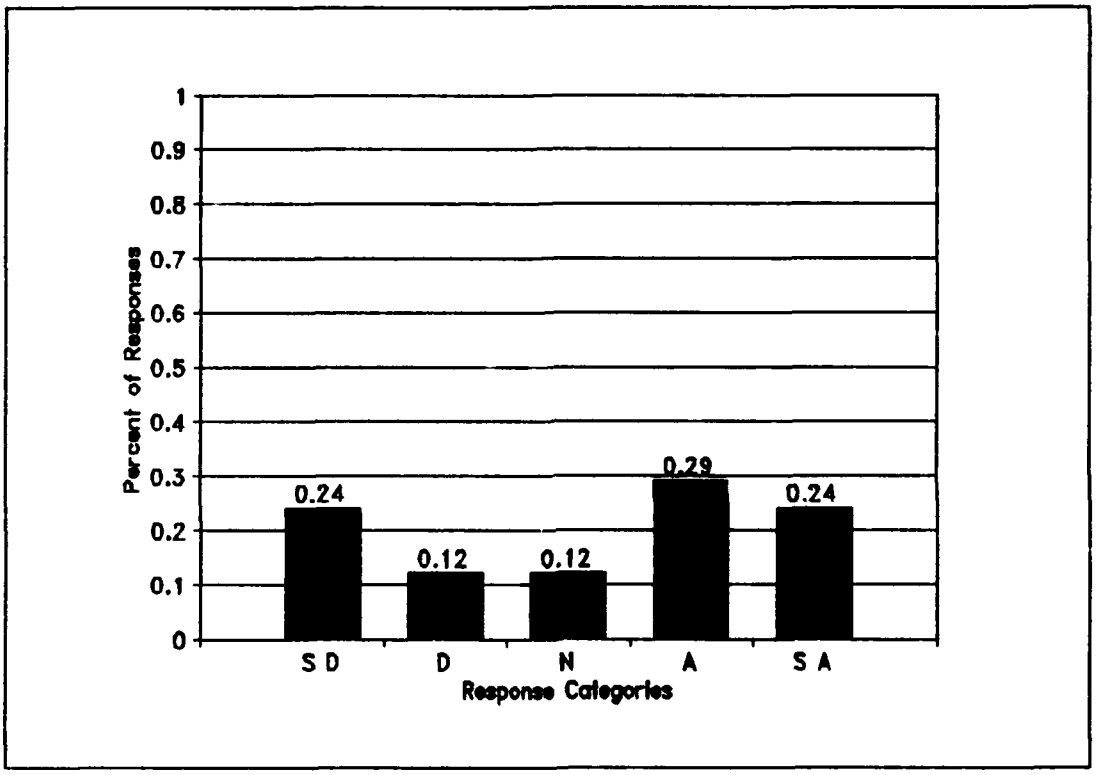

Figure 23. Question 18 Response Distribution

the panel members disagreed or strongly disagreed. A major reason for disagreement with the question was the opinion that the units know what they need for support better than the major command functional managers.

Question 19 [IQ-3]. A computer program that simulates wartime requirements should be developed that will establish standard UTC requirements. The response distribution and

tendency measures (mean, median, mode) are provided in Figure 24 and Table 27.

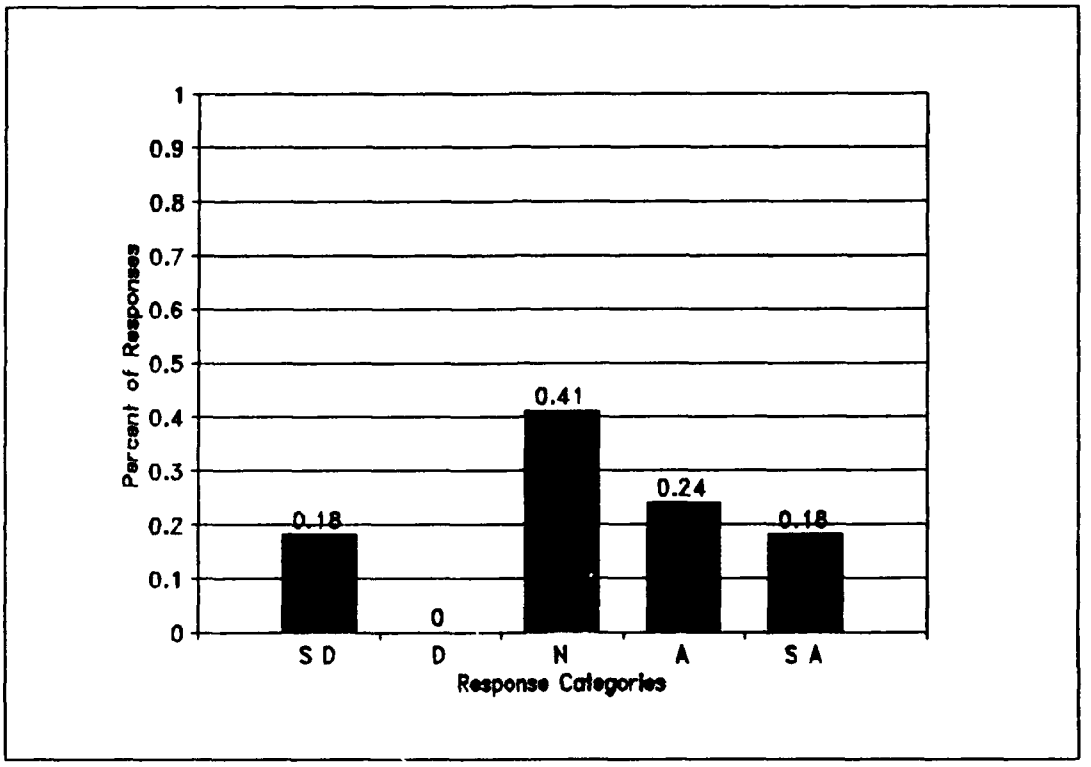

Figure 24. Question 19 Response Distribution

Table 27

Question 19 -- Tendency Measures

Median - 3.00	Mean - 3.24	Mode - 3.00

Analysis. For the first questionnaire, 50% of the respondents selected neither agree nor disagree. For the second questionnaire, consensus was not obtained. The median and mode were neither agree or disagree. Forty-one percent of the panel members neither agreed or disagreed;

however, 42% of them agreed or strongly agreed. The only pattern which could be identified within possible subgroups was in the panel members who have standard unit type responsibilities as a secondary responsibility. Sixty-six percent agreed with the statement. The comments ranged from the units should have a say in it, to the computer model is better than nothing with future reductions in budgets.

Question 20 [IQ-3]. Non-pilot units should have minimal inputs into unit type code [type unit] development. The response distribution and tendency measures (mean, median, mode) are provided in Figure 25 and Table 28.

Table 28

Question 20 -- Tendency Measures

Median - 1.00	Mean - 1.82	Mode - 1.00

Analysis. A very strong majority of the panel members strongly disagree (65%) with the idea of non-pilot units having minimal inputs into standard type unit development. Any change to the development process which minimized non-pilot participation would not be supported by these panel members. The comments support increasing non-pilot unit involvement in the development process and placing less regulatory restriction on them.

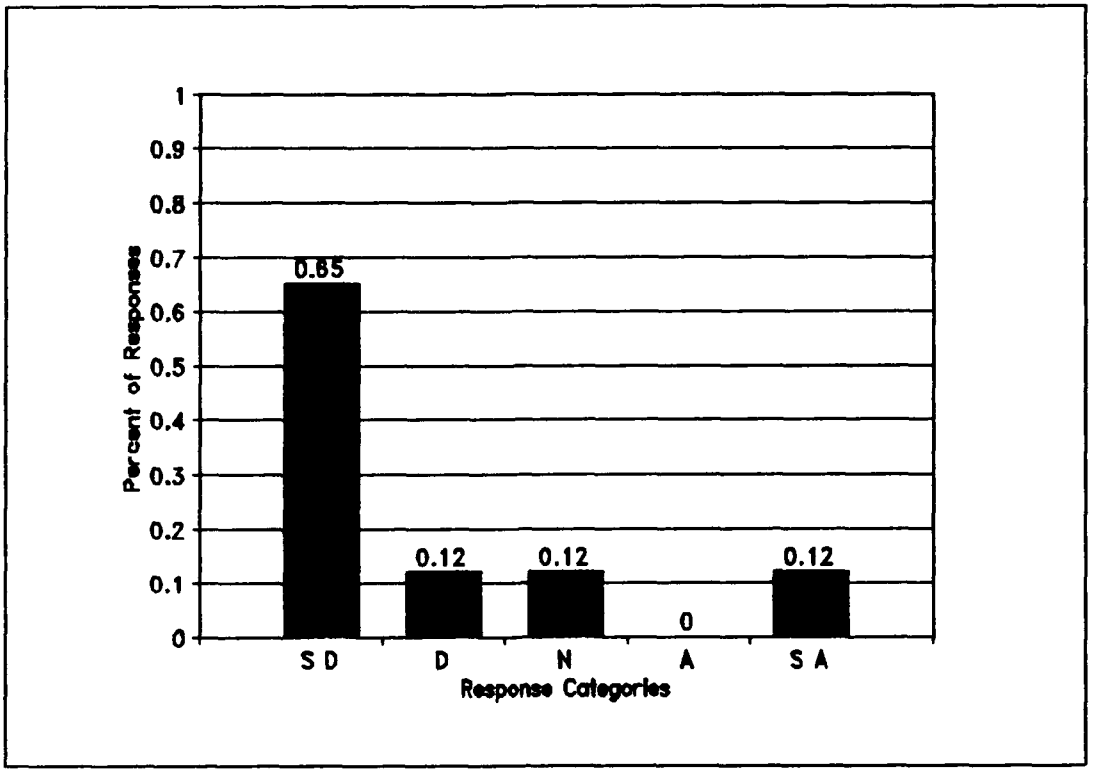

Figure 25. Question 20 Response Distribution

Question 21 [IQ-3]. Standard UTCs don't work (i.e., don't relate to the way we train), so let each unit develop their equipment requirements. The response distribution and tendency measures (mean, median, mode) are provided in Figure 26 and Table 29.

Analysis. A majority of panel members disagree (47%) or strongly disagree (35%) with the idea of allowing each unit develop their own equipment requirements. There were several comments as to why they disagree with this question. They were airlift requirements and standardization for deliberate planning. One comment was that the reason the standard type units do not work is due

to lack of testing the package. Operational test of the complete standard type units seldom if ever happens.

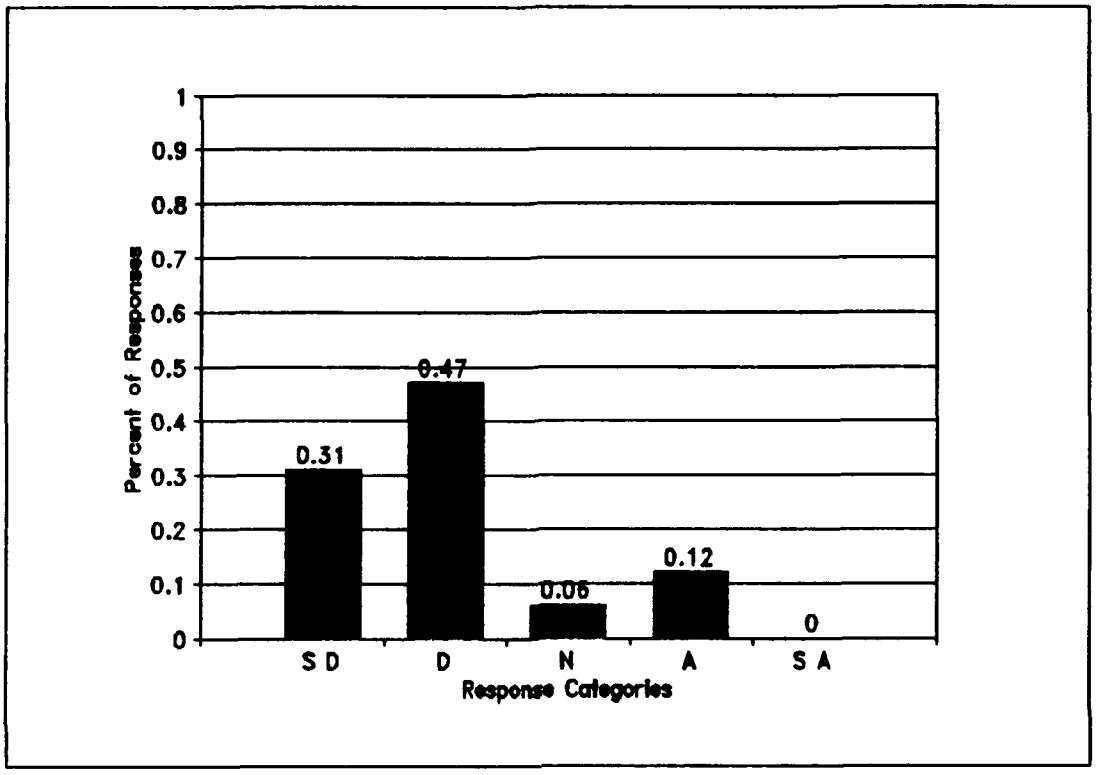

Figure 26. Question 21 Response Distribution

Table 29

Question 21 -- Tendency Measures

Median - 2.00	Mean - 1.94	Mode - 2.00

Another comment stated that the units need to make the standard type unit work. Not to do away with it, but to develop a standard type unit that works. No panel member strongly agreed with allowing each unit to develop equipment

requirements and only a small percentage agreed with the idea.

Question 22 [IQ-1]. Training on UTC development is insufficient. The response distribution and tendency measures (mean, median, mode) are provided in Figure 27 and Table 30.

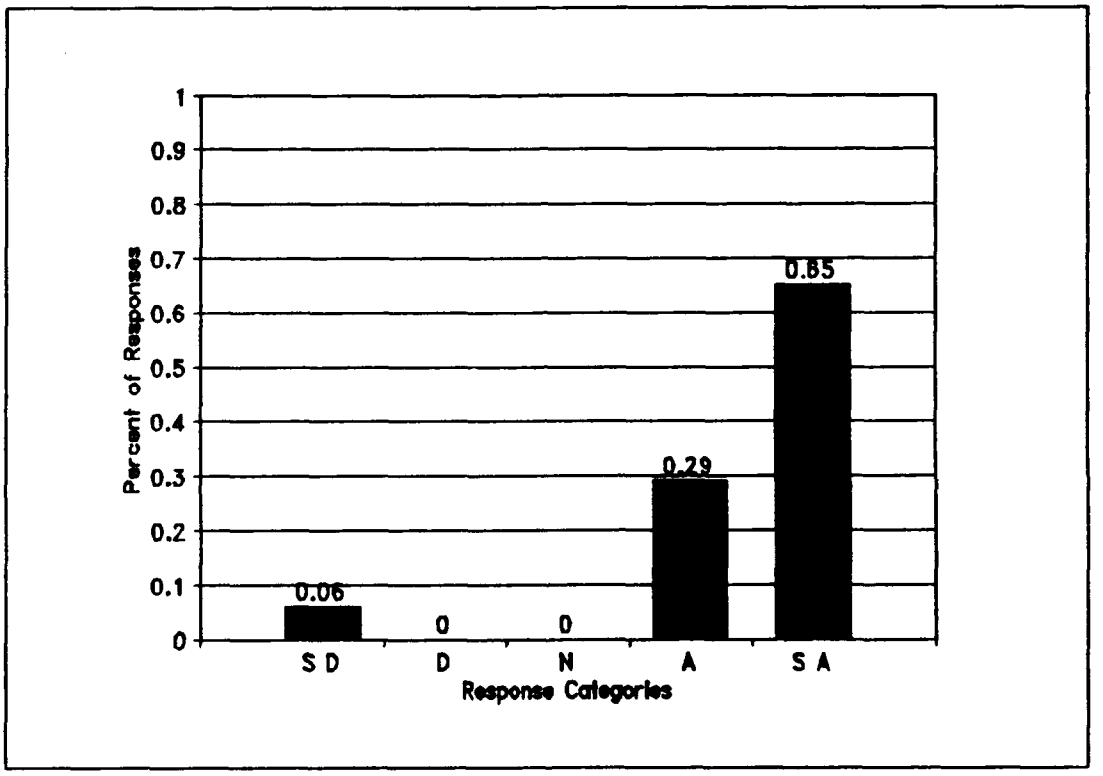

Figure 27. Question 22 Response Distribution

Table 30

Question 22 -- Tendency Measures

Median - 5.00	Mean - 4.47	Mode - 5.00

Analysis. Only a small percentage of the respondents think training on type unit development is sufficient. An overwhelming percentage, 65%, strongly agree that training is insufficient. Overall, ninety-four percent either agreed or strongly agreed that current training is insufficient. Providing quality training at all levels (from the squadron to the major command) could improve the standard type unit development process.

Question 23 [IQ-1]. The MAJCOM functional managers have the most knowledge to solve UTC equipment problems. The response distribution and tendency measures (mean, median, mode) are provided in Figure 28 and Table 31.

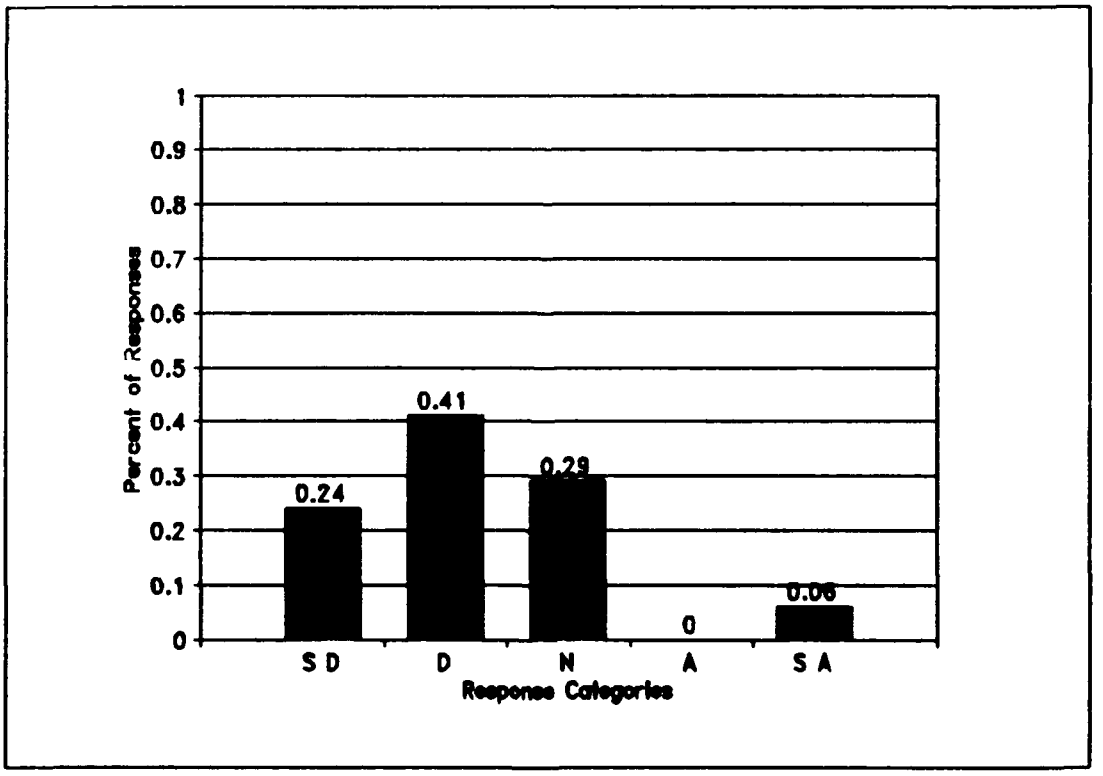

Figure 28. Question 23 Response Distribution

Table 31

Question 23 -- Tendency Measures

Median - 2.00	Mean - 2.18	Mode - 2.00

Analysis. The consensus for the question was 65% for either disagree (41%) or strongly disagree (24%) that the major command functional managers have the most knowledge to solve standard type unit development equipment problems. The median and mode support the consensus of disagreement. This consensus indicates that the panel members feel that functional managers have a lack of knowledge for solving standard type units equipment problems. The one panel member who strongly agreed that functional managers have the most knowledge to solve the equipment problem was a functional manager.

Question 24 [IQ-1]. There is not enough formal guidance dealing with UTC development making it difficult to develop a good standard UTC. The response distribution and tendency measures (mean, median, mode) are provided in Figure 29 and Table 32.

Analysis. A strong majority (82%) of the panel members agree (53%) or strongly agree (29%) that more formal guidance is required to make development of a good standard type unit easier to accomplish. The panel members commented that the new regulatory guidance does not go far enough.

They would like to see a how-to-do-it manual for functional managers, pilot units, and non-pilot units written along with some formal training.

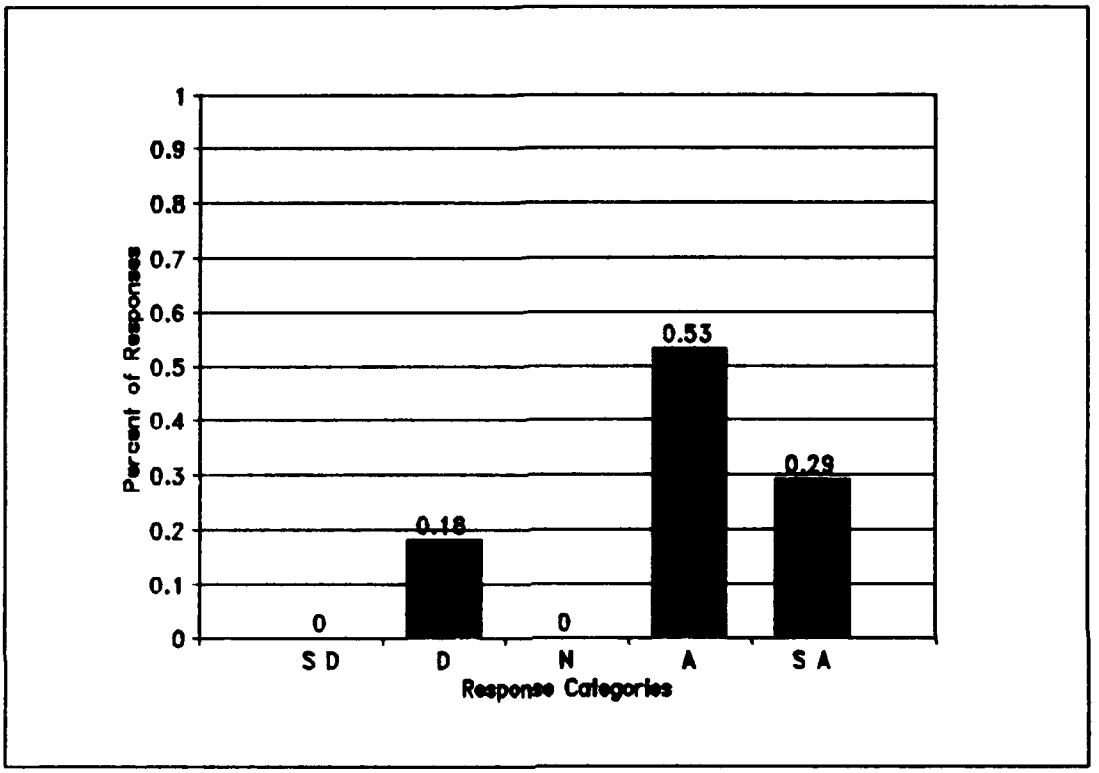

Figure 29. Question 24 Response Distribution

Table 32

Question 24 -- Tendency Measures

Median - 4.00	Mean - 3.94	Mode - 4.00

Question 25 [IQ-3]. There should be one comprehensive publication which covers all levels of UTC development and responsibilities (i.e., pilot, non-pilot, functional

managers). The response distribution and tendency measures (mean, median, mode) are provided in Figure 30 and Table 33.

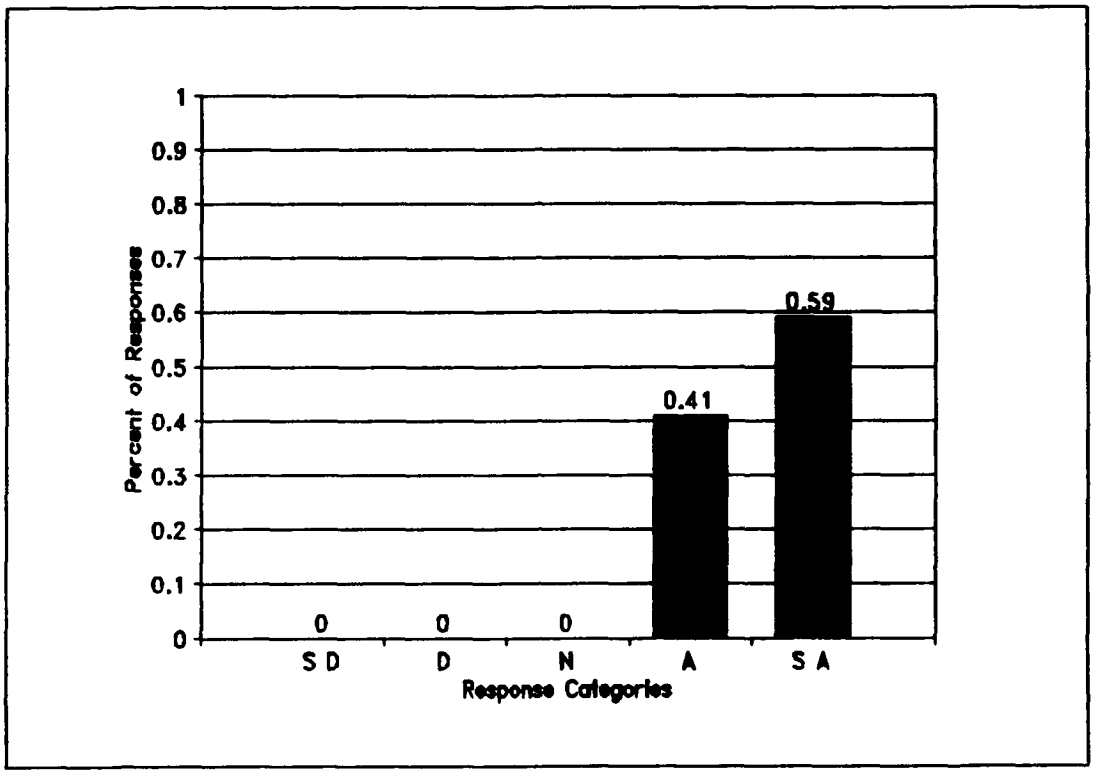

Figure 30. Question 25 Response Distribution

Table 33

Question 25 -- Tendency Measures

Median - 5.00	Mean - 4.59	Mode - 5.00

Analysis. All of the panel members agreed (41%) or strongly agreed (59%) that should be one publication that covers all standard type unit development responsibilities rather than having several publications (as there currently

are). Again, as with Question 24, a handbook on all levels of the development process was mentioned in the comments.

Question 26 [IQ-3]. Standard UTCs should be developed with a core package of equipment (universal requirements for all like units) plus a unit unique package. The response distribution and tendency measures (mean, median, mode) are provided in Figure 31 and Table 34.

Table 34

Question 26 -- Tendency Measures

Median - 4.00	Mean - 3.82	Mode - 4.00

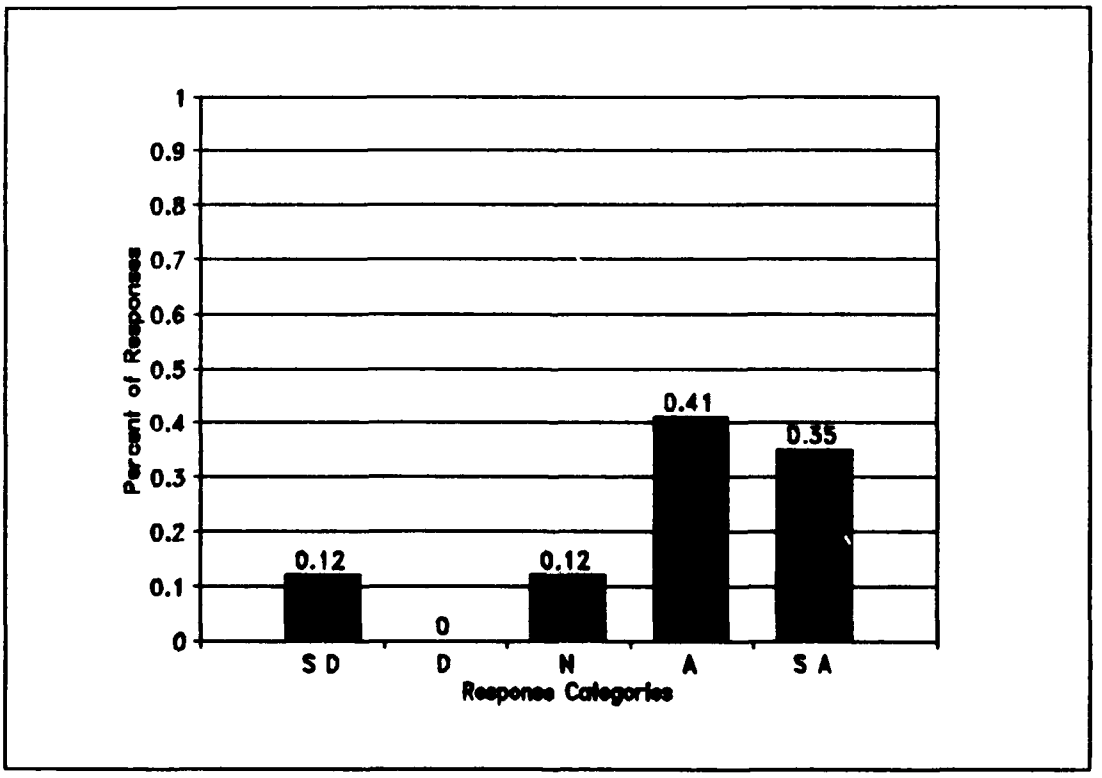

Figure 31. Question 26 Response Distribution

Analysis. The consensus was that panel members agree (41%) or strongly agree (35%) with the idea of having a core package plus a unit unique package. The median and mode for the question is agree. The emphasis was that the unit unique equipment must be coordinated with the major command. As with Question 15, units feel that tailoring is required for a successful package. The units need the ability to add equipment if approved by the major command. Only 12% of the panel members strongly disagreed. They commented that this is what occurs now, and it affect airlift requirements and allocations.

Question 27 (Question 34 on First Questionnaire) [IQ-31]. Are there any changes you can suggest that might improve the UTC development and execution process?

Analysis. This question brought out numerous suggestions from the panel members. First, the planning documents are hard to read making it difficult to match personnel and equipment into a standard type unit. A suggestion was made to have one table of allowance per weapon system and make the mission capabilities and design operational capabilities statements easier to read at unit level. The next comment was to allow logistics planners more flexibility in doing their job. Involvement from the beginning to the end of a deployment is the key. Another comment related to having meetings between the functional manager, pilot unit, and non-pilot units on developmental issues. All three need to work closely to development a

good usable standard type unit. At the headquarters level, reduce the time it takes the Air Staff to approve new standard type units. Also, establish a standard type unit manager in the major command's logistics office. Finally, a single publication along with a training course is recommended by the panel members. The publication should cover all levels of the developmental process. The formal training could use this publication and should be open to all personnel developing standard type units and not restricted to certain Air Force Specialty Codes.

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13. ABSTRACT (Maximum 200 words)

This research study examined the standard type unit development process for the Air Force. Current standard type unit development procedures were determined by a literature review. The literature review, with the interviews, provided information regarding the history of, purpose for, and possible alternatives for developing standard type units. A Delphi questionnaire was developed to determine how well the current process works, how standard type units worked for Desert Shield/Storm, and possible ways to improve the development process. This questionnaire was distributed to F-15 units, F-16 units, and major command personnel in Tactical Air Command (now Air Combat Command). All three levels in the development process were represented in the study. Analysis indicated that the current development process does not produce standard type units capable of meeting mission requirements. The process requires modification. Key changes required are formal training for all personnel within the development process, and developing one comprehensive publication detailing the duties and responsibilities at all levels of the standard type unit development process.

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2. Do you believe this research topic is significant enough that it would have been researched (or contracted) by your organization or another agency if AFIT had not researched it?

a. Yes b. No

3. The benefits of AFIT research can often be expressed by the equivalent value that your agency received by virtue of AFIT performing the research. Please estimate what this research would have cost in terms of manpower and/or dollars if it had been accomplished under contract or if it had been done in-house.

Man Years _____ $ _____

4. Often it is not possible to attach equivalent dollar values to research, although the results of the research may, in fact, be important. Whether or not you were able to establish an equivalent value for this research (3, above) what is your estimate of its significance?

a. Highly Significant b. Significant c. Slightly Significant d. Of No Significance

5. Comments

_____ _____

Name and Grade Organization

_____ _____

Position or Title Address